Amateur Radio

JOURNAL OF THE
WIRELESS INSTITUTE
OF AUSTRALIA

VOL 55, No 4, APRIL 1987

A new triangular aluminium tower manufactured in Australia!

SPECIAL INTRODUCTION

A special introductory price of $1250 for 3x5.5 metre sections when placed together giving a tower height of 16.5m (54 feet) complete with hinged base, freight and insurance delivered anywhere within mainland Australia. The only extra cost one can incur is for ground guy anchors, turn-buckles and associated hardware.

Two levels of guys are recommended at 120 degree spacing on the 8 and 16 metre point above ground. Alternatively, a bracket could be used from a building in lieu of the lower set.

The 16.5 metre triangular towers that are 32cm across each side will be most popular with amateurs as they come complete with hinged plate, top plate with weather proofed bearing, two metres of scaffold tube masting, stainless steel hardware, assembly tool kit, galvanised base bolts and hardware, tower guy anchors, thimbles, winch steel cable pulleys and hardware for easy erection and lowering of your tower plus easy to follow assembly and installation instructions. The packaged weight is a mere 70kg.

A typical installation would have the hinged base adjacent to the highest point of a house or building to which a pulley is attached. A steel cable from the winch (mounted on 1 metre of 38 mm vertical water pipe which is in the same concrete block as the base bolts) runs over the pulley and out to a point on the tower approximately 8 metres above ground. (The house is acting as a gin-pole).

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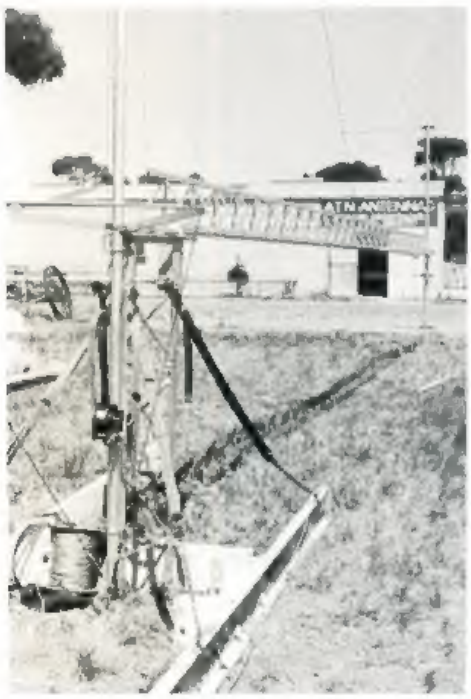

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Amateur Radio

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From left: VK3DOJ, VK6YA and VK3SS inspect Dave's antenna system.

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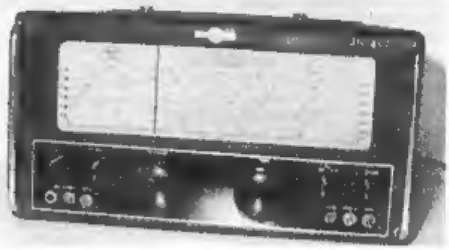

Regular Features

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All copy for inclusion in the June 1987 issue of Amateur Radio, including regular columns and Hamads, must arrive at PO Box 300, Caulfield South, Vic. 3162, at the latest, by 9 am, April 21, 1987.

Amateur Radio

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Editor's Comment

DEVOLVEMENT

A new "buzzword" has appeared on the political scene over the last few years. Perhaps, as "devolution", it first became prominent in Britain in connection with responsibility for the government of Northern Ireland. Some people encountering it for the first time seem to imagine it is a misprint for "development", from which it only differs by one letter (give or take a slightly dyslexic reshuffle!) But it does have a rather different meaning, essentially being a contraction of "dis- involvement". Surprisingly, the verb "to devolve" has been listed in dictionaries for many years, with definitions such as "to cast responsibility or duty on to another", and particularly "to delegate political responsibility".

In matters which involve the Amateur Service, devolvement is a topic of fast-developing significance. Already, in the USA, the system (once the sole prerogative of the FCC) by which operators' proficiency standards are set and candidates examined, has been "devolved" for amateur licensing on to the ARRL and some other organisations. Before this, commercial licensing had been passed to representatives of the various communications services. Australia is well along the same path, and the Amateur Service is one of few for which DOC still has examination responsibility. To quote a few more "buzzwords" the trend is to "smaller government", "deregulation", and "user pays". Why? Because no one likes paying taxes, particularly to support something not seen as benefiting everyone equally. Those who are especially benefited should pay the price; perhaps those who have complained about Government inefficiency now have a chance to show how they can do it better, or cheaper, or both.

I am not going to attempt to suggest how this should be done. Much is yet to be discussed. Obviously the WIA has a great interest in the situation, particularly on behalf of those yet to become licensed amateurs, and perhaps join the WIA, rather than those of you who are already members. Even so, many members with Novice or Limited licences or SWL members will wish to upgrade in time, so there is a direct responsibility to at least half our members.

What is the WIA doing about it? You have seen the insert in January's AR, outlining the Department's intentions. Executive has been discussing the pros and cons of a multitude of possibilities for several months. Most Divisions have held meetings to discuss the topic. At Clubs and Club Conferences everyone is (or will be) talking about it. It must be a major item on the agenda for the Federal Convention early next month. Out of all this will emerge (we hope) a plan which satisfies all requirements. If you want to participate in this evolution of devolution, please tell your Divisional or Federal Councillors what you think.

So sometime in the next year or two the exam devolvement problems will be solved, and we can all relax. Can we? Already, in the UK, there is a proposal to devolve spectrum management. Here we go again!

Bill Rice VK3ABP
Editor

Try This!

Ivan Huser VK5QV
7 Bond Street, Mount Gambier, SA 5290

A BEVERAGE CW RESONATOR

This device has nothing to do with the well-known Beverage Antenna, but is a CW resonator intended to improve CW reception.

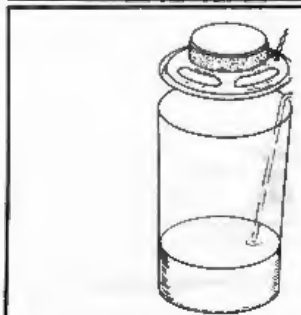
Take a large tumbler of your favourite beverage — be it scotch, vodka, gin, cold tea or water. Strategically suspend a two inch (50 mm) loudspeaker connected to a rig across the tumbler as shown in the diagram.

Beverage CW Resonator.

Tune your receiver to give a beat-note of around 800 Hz with a carrier and slowly reduce the amount of liquid in the tumbler until it resonates with the tone. When close to resonance, minor adjustment to the distance between the speaker and the top of the tumbler may be needed to obtain exact resonance.

The resultant effect on the perceived tone will depend to some extent on the type of beverage used for the exercise, the amount of beverage left in the tumbler at resonance and, of course, the method of extracting the beverage from the tumbler.

Try this — if it does not improve the reception of CW, then it may well give you a nice inner warmth.



AMATEUR OPERATOR EXAMINATIONS — ACCREDITATION OF EXTERNAL BODIES
WIRELESS INSTITUTE OF AUSTRALIA INTERIM SUBMISSION
FEBRUARY 1987

The Wireless Institute of Australia (WIA) acknowledges receipt of the Department of Communications (DOC) Draft Accreditation Package.

Consultation with the membership has been undertaken by means of:

a an insert in the January edition of *Amateur Radio*.
b an article in the *Education Notes* in the February edition of *Amateur Radio*.
c a Federal audio tape circulated for Divisional news broadcasts.
d circulars to Divisions, clubs and members known to be concerned in education affairs.
e extensive discussion on air and at club and Divisional meetings.

Responses from a range of sources have been received and collated.

Because of the time constraints it has not been possible for the matter to be debated fully. Accordingly, arrangements are being made for full discussion at the Federal Convention of the Institute to be held on May 1-3, after which a further submission will be made.

The Institute is deeply concerned that the broad development suggested in the package may lead to the erosion of accepted standards and a variation between standards established by different examining bodies.

To avoid this risk, it is seen an essential that the production of amateur operator examination papers be restricted to one body only.

The Institute, after due consultation with its Divisions and members, offers the following arrangements in order of preference.

1 That the DOC reconsider the proposal to devolve responsibility for examinations and maintain the present examination arrangements.

2 That the DOC continue to produce examination papers at the current rate, but make the papers available on request to the Institute, colleges, clubs, or groups desiring to arrange examinations for candidates at time determined by the group concerned.

3 That the DOC accredit the Federal body of the WIA as the sole organisation to produce examination papers, those papers to be distributed under security conditions to groups desiring to conduct examinations.

If the proposal to devolve totally is the outcome of the current consultative process, we request that, as an interim measure, option 2 be implemented until at least the end of 1988. This would allow the phasing in of the new system, giving clubs and groups experience in organising local examinations and allow time for the Institute to establish an examinations section.

Further, we request that the DOC question bank as well as copies of all past multi-choice papers and the computer program for generating Morse code exams be made available for WIA use at least 18 months prior to total devolvement.

We note that if either the second or third option (or similar) is finally selected, considerable discussion will need to take place between the Department and the Institute to ensure a smooth transition takes place.

A number of other requests have arisen from discussion with members.

These include:

i that the DOC continue to administer examinations to candidates who, because of some disability, are unable to attempt the standard multi-choice paper.

ii that the DOC consider abolishing the Morse code sending exam on the grounds that:

(a) demonstrated competence in receiving usually is accompanied by competence in sending at that speed.

(b) candidates in the USA are no longer examined in Morse code sending.

iii that DOC give some recompense to the WIA for the costs involved in establishing an Examinations Section — by either single or annual subsidy, by donation of office equipment, or by a significant reduction in the level of amateur operator licence fees, of which, at present, a percentage is dedicated to examination costs.

We appreciate the opportunities the Institute has had to discuss these matters with officers of the Department of Communications and look forward to further consultation before the Department's final recommendations are made.

Signed: D A WARDLAW
FEDERAL PRESIDENT
WIRELESS INSTITUTE OF AUSTRALIA

The above is a letter sent to the Manager, Regulations, Radio Frequency Division, DOC, in reference to devolvement of AOCP examinations.

FEDERAL CONVENTION AGENDA ITEM

The following is a Draft Agenda Item for discussion at the 1987 Federal Convention (May 1-3 1987).

MOTION THAT

Progress on "The Future of Amateur Radio" be reviewed, Divisional presentations by received and guide lines be established.

MOVED BY (Initiated by Executive)

PROPOSER'S COMMENTS

The 1986 Federal Convention set up "The Future of Amateur Radio" Working Party to report on its terms of Reference to the 1987 Convention. As it is unlikely the Working Party will be able to meet that time scale it is prudent the matter be reviewed, Divisional attitudes established and clear guide lines provided for the next year.

To this end Divisions are requested to provide presentations addressing the issues in the following guidance paper and such other matters as are deemed relevant. Presentations should be timed for 15 minutes duration (followed by up to 10 minutes for clarifying questions). The Federal Council, acting in committee, will then produce guidelines based upon divisional inputs. It would be advantageous if Divisions could circulate their papers prior to the Convention.

THE FUTURE OF AMATEUR RADIO

Introduction

The Future of Amateur Radio Working Party was set up as a result of Federal Convention 1986 to report to the 1987 Convention. Its Terms of Reference follow. As it is unlikely the Working Party can meet that time scale it is considered essential Federal Councillors attending the 1987 Federal Convention be prepared to present their members views. To achieve that aim in an efficient manner a structured approach is highly desirable, consequently this paper sets out a framework of talking points, with allied issues for Divisional consideration.

The Approach

The following talking point sequence has been identified:

a Identify the problem in general, then in particular with allied limitations, both real and apparent.
b Identify the need, in the broad and then in specifics with associated constraints, problems and limitations.
c List the options; a comprehensive list, with merits and faults, should arise.
d Identify feasible options.
e Recommend a course of action.

Each of these points will be developed further in the following paragraphs, not so much to guide your solutions as to expose a range of factors that should be considered. This approach will take the general format of statements accompanied by a series of related but unanswered questions.

Identify The Problem

After a post CB boom, recruitment to amateur radio is falling off, and the age profile shows few "young" amateurs.

Q1 Is this observed profile *significantly* different from the national age profile?
Q2 Were there ever many "young" amateurs?
Q3 Is amateur radio a "young" persons pursuits/hobby?
Q4 Is this only a temporary or cyclic situation of about 10-11 years duration?

Consequences

The perceived consequence of a fall in amateur numbers is a possible loss of privileges and/or frequencies.

Q5 Is this perceived loss of privileges real or likely? Should we worry?
Q6 Could a contracting amateur regime be established; ie, can we adapt to decline?

Limitations

The current constraints on entry to amateur radio limit recruitment.

Q7 Are these constraints real or perceived?
Q8 What is the feeling on Morse code versus no Morse code licences?
Q9 Do new entrants wish to use amateur radio for personal communications (see definition of amateur radio) or as "data bearers"?
Q10 Have entrance standards drifted up or education levels come down? Is there a mismatch arising?
Q11 Has amateur radio priced itself out as a popular hobby through equipment costs?

Identify The Need

In the broad; to sustain the amateur population on a relative basis and offer amateur radio to a community with increasing leisure time and skills (but not comensurately increasing disposable income)!

In detail; to identify the many aspects of amateur radio and ensure entry for potential practitioners of each is not unduly constrained or unbalanced.

Q12 What are these varied aspects?
Q13 What are the corresponding entry modes now available? Identify the mismatches.
Q14 What are the educational skills associated with the aspects?

Constraints

There are current constraints such as escalating entry standards and associated increases in course durations, more technically complex equipment, increasing costs of new equipment and a decline in supportive help (the Elmer approach).

Q15 Do we want more entry points to the hobby?
Q16 Do we affirm WIA policy that Novice remains the lowest licence level?
Q17 Can we demonstrate to DOC's satisfaction that Novice examination levels in particular have risen unnecessarily over the years?
Q18 Do we accept the lowest examination level (current Novice) as an entrance test or a hobby membership control regulator? That is; do we pass all who are qualified, or only a set percentage of applicants?
Q19 Seriously, will less complicated equipment ever return to the amateur scene? Or will it just appear less complicated through use of LSI/VLSI components?
Q20 Can use of LSI/VLSI components bring down relative costs of equipment?
Q21 Is the decline in supportive help real? Are Elmers dying out and can we/should we revive them?

List The Options

Consideration of this talking point can be general, establishing desirable principles, or expansive providing a comprehensive list of options together with their merits and faults. It is essential these qualifying properties be identified in order to discard all unworkable options.

Some general principles could include:

a entrance examinations available at several levels giving a band or operating privileges, but no more difficult than at present or we will not expand)!
b No more examinations than at present, die to costs and range already offered. Changes must be by re-arrangement not by addition.
c International commonality, for reciprocal licensing purposes, should not be neglected.
d Consider introducing a single exam with graded pass levels for differing licences.

Q22 Can this be achieved with differing scope syllabi?

e Consider introducing an advanced class certificate and licence.

Q23 What differentiates this proposed advanced class from the current AOCP? CW speed or theory level difficulty (or both) and would this lead to disaffection?
Q24 If introduced what happens to current full licence holders? Are they "demoted"?

f Introduction of a common band for all licence classes.

Q25 What band and emission modes?

Identify Feasible Options

Be ruthless in culling questionable options. Take heed of earlier limitations such as "user pays" for DOC (and others) services and reduce complexity to a minimum. Ask yourself if you would be willing to administer much of your newly proposed ideas, without EDP and in an unpaid volunteer capacity?

Recommended Course of Action

The recommended course of action should be clearly and simply spelled out. It has to be convincing when read by the average amateur who has not kept up with these developments and is inclined to go off half-cocked and ill-informed.

Furthermore it must give clear guidance, without being either over- constraining on the one hand or lacking broad direction on the other, for the Executive to implement it without continual recourse to the originator and Federal Council.

Ron Henderson VK1RH
February 8, 1987
ar

Underwater Radio Communication

Lloyd Butler VK5BR
18 Ottawa Avenue, Panorama, SA. 5041

How far can we communicate underwater in the sea or in a lake? How large is the signal attenuation and what frequency can be used? Could we use 1.8 MHz?

In the following paragraphs, we attempt to answer some of these questions.

One could ask why a radio amateur enthusiast might be interested in underwater communications. Well, he could be interested in skin-diving and wish to set up a communications link with the surface, or perhaps he might be interested in radio controlled boats and wish to try his hand at model submarines! On the other hand, he might just be interested in another area of experimentation because here is a field, relatively untouched by the amateur fraternity, involving different transmission techniques, different antenna designs and different equipment environmental problems.

The scope of this article concerns the transmission characteristics of radio waves underwater and the extent to which the radio amateur might make use of these characteristics.

WATER CONDUCTIVITY

Water in its pure form is an insulator, but as found in its natural state, it contains dissolved salts and other matter which makes it a partial conductor. The higher its conductivity, the greater the the attenuation of radio signals which pass through it.

Conductivity (σ) varies with both salinity and temperature. Sea water has a high salt content and high conductivity varying from 2 mhos per metre in the cold arctic region to 8 mhos per metre in the warm and highly saline Red Sea. Average conductivity of the sea is normally considered to be about 4 mhos per metre. What this means is that one metre cube of sea water has a conductivity of 4 mhos or a resistance of 0.25 ohm, it reciprocal.

So called fresh water has lower conductivity and as a guide to this, a sample analysis of Adelaide water taken in 1983 has been used. This sample was taken from an area principally supplied by the Barossa reservoir and the analysis shows total dissolved salts as approximately 300 mg/litre and a conductivity of 0.0546 mhos per metre. How close this is to the average waters in lakes and rivers in Australia is not known, but as it is the only water on hand, it has been used as a reference.

ATTENUATION

Attenuation of radio waves in water (and, in fact, in any conducting medium) increases both with increase in conductivity and increase in frequency. It can be calculated from the follow formula:

Attenuation (α) in dB/metre
$$= 0.0173\sqrt{(f\sigma)}$$
where f = frequency in hertz
σ = conductivity in mhos/metre

Figure 1 illustrates attenuation as a function of frequency for sea water and Adelaide water. Attenuation in sea water is very high and to communicate at any depth at all, it is necessary to use very low frequencies (10 to 30 kHz) where attenuation is in the order of 3.5 to 5 dB per metre. Operation in the lowest frequency amateur band (1.8 MHz) is out of the question at 46 dB per metre.

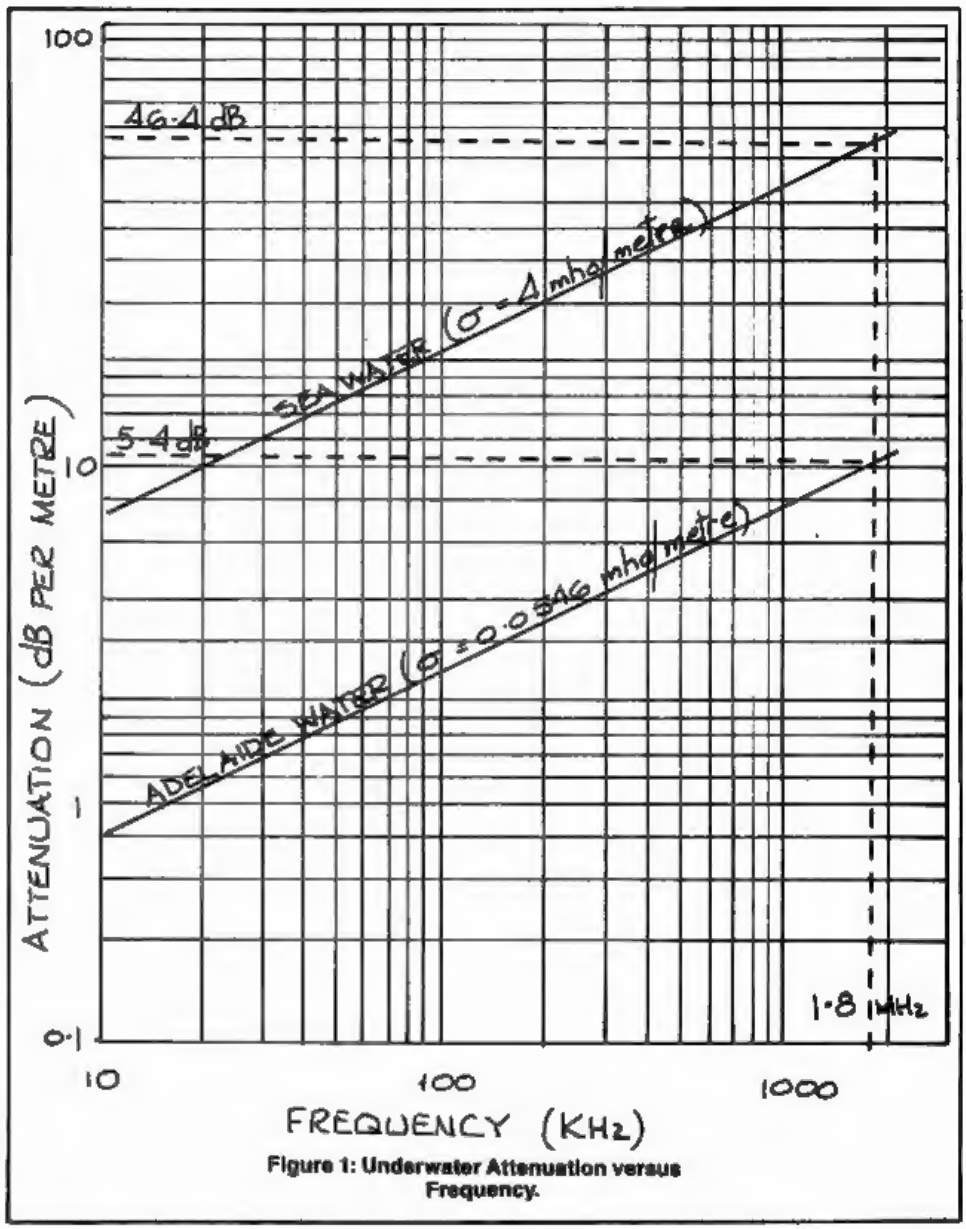


Figure 1: Underwater Attenuation versus Frequency.

The potential for operation in fresh water is much better. Using the Adelaide water sample, attenuation at 10 kHz is only 0.4 dB per metre rising to 5.4 dB per metre at 1.8 MHz.

REFRACTION OR INTERFACE LOSS AT THE SURFACE

When EM waves travel from air to water or water to air, there is a refraction loss due to the change in the medium. This loss can be calculated from the following formula:

Refraction loss (dB) =
$$20 \log \left(\frac{7.4586}{10^6} \left(\frac{f}{\sigma} \right)^{1/2} \right)$$

In sea water, this loss is quite high and in the vicinity of 60 dB for the low frequencies normally used. If communication is required from surface to underwater, path loss can be reduced by connecting the surface equipment to an antenna under the surface so that the refraction loss is eliminated.

Figure 2 illustrates refraction loss as a function of frequency for sea water and Adelaide water. It can be seen that refraction loss falls with an increase in frequency and in

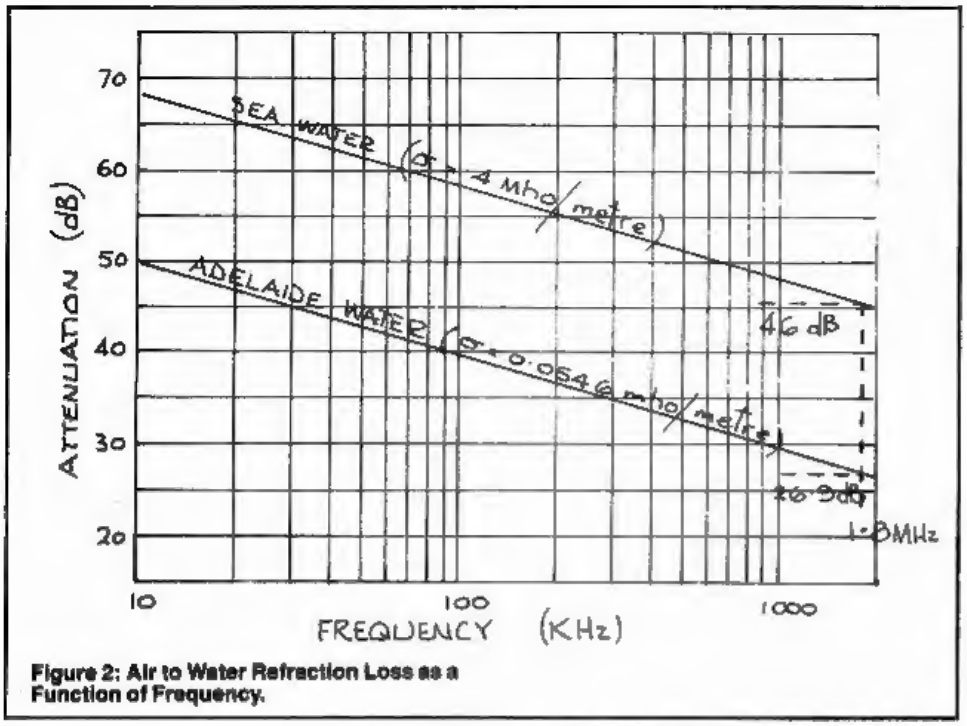


Figure 2: Air to Water Refraction Loss as a Function of Frequency.

the case of the fresh water, this loss is down to 27 dB at 1.8 MHz which is quite attractive from an amateur radio point of view.

WAVELENGTH IN WATER

The wavelength in water is but a fraction of that in space and is calculated from the following formula:

$$\text{Wavelength } (\lambda) \text{ in metres} = \frac{1000}{\sqrt{\left(\frac{10}{f_0}\right)}}$$

Figure 3 plots wavelength versus frequency. In sea water, wavelength at 10 kHz is only 15.8 metres compared to 30 km in space. In fresh water the reduction in wavelength is not so dramatic but still quite considerable. At 1.8 MHz, wavelength is 10.1 metres compared to 167 metres in space. This reduction is wavelength leads to some considerable differences in antenna engineering with an underwater dipole at 1.8 MHz being only a few metres long.

TRANSMISSION OPTIONS

The lower the frequency, the lower the attenuation in water and the better the potential for communications. Unless a band of frequencies could be approved for amateur use in the VLF region, the options for amateur radio are restricted to 1.8 MHz and communication in fresh water. A few transmission examples for this application will be discussed and these will be based on the following assumptions:

1. Radiated power is 0 dBW (referred to one watt developed in a half wave dipole). All other measurements are in decibels referred to that level.
2. Receiver bandwidth = 3 kHz.
3. Minimum discernible receive level at receive antenna = 10 dB above thermal noise (KTB) ie -153 dBW (for 3 kHz bandwidth).
4. Atmospheric noise at 1.8 MHz = 35 dB above KTB (taken from published noise charts) ie -128 dBW for 3 kHz bandwidth.
5. Attenuation in fresh water = 5.4 dB/metre (from Figure 1 at 1.8 MHz).
6. Water/air refraction loss = 27 dB (from Figure 2).

Figure 3: Wavelength versus Frequency.

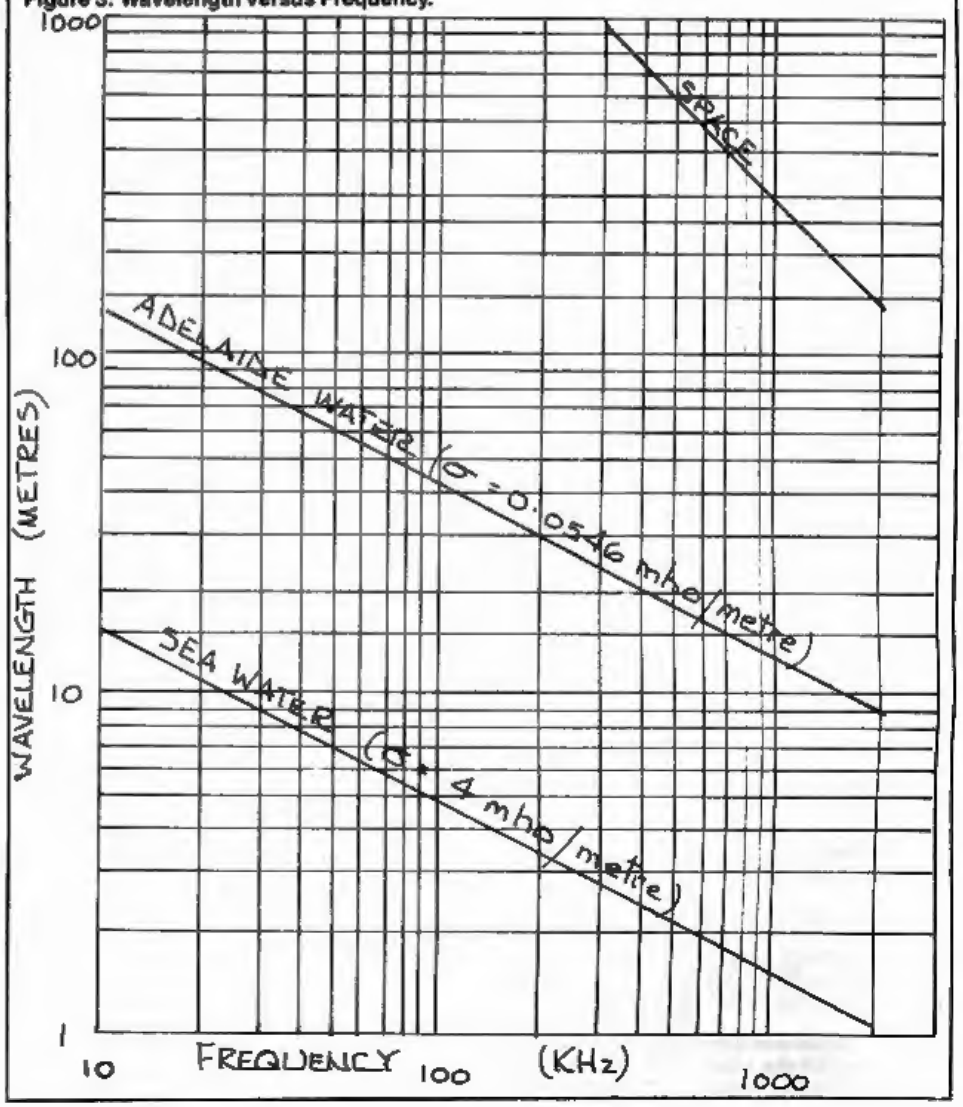


Figure 4 shows the receiver submerged and the transmitter above the surface. The signal path is subject to 27 dB air/water interface loss. Atmospheric noise is also attenuated by the interface and path loss and minimum receive level is set by the sensitivity of the receive system (not affected by atmospheric noise). Maximum length of the water transmission path works out to 23 metres.

Figure 5 reverses transmission direction so that the transmitter is submerged and the receiver is above the surface. In this case the minimum receive level is set by the atmospheric noise (well above the receive system sensitivity). Because of this, the maximum length of water transmission path is reduced to 18.7 metres.

Figure 6 submerges both transmitter and receiver, eliminating the air to water interface loss of 27 dB. This extends the maximum length of water transmission path to 28 metres.

We now turn our attention to transmission in space. Beyond one wavelength from the transmitting antenna, field strength in space varies inversely with distance; ie the signal is attenuated 6 dB each time the distance is doubled and attenuation from a point one wavelength from the antenna to a distance d is equal to 20 log (d/λ).

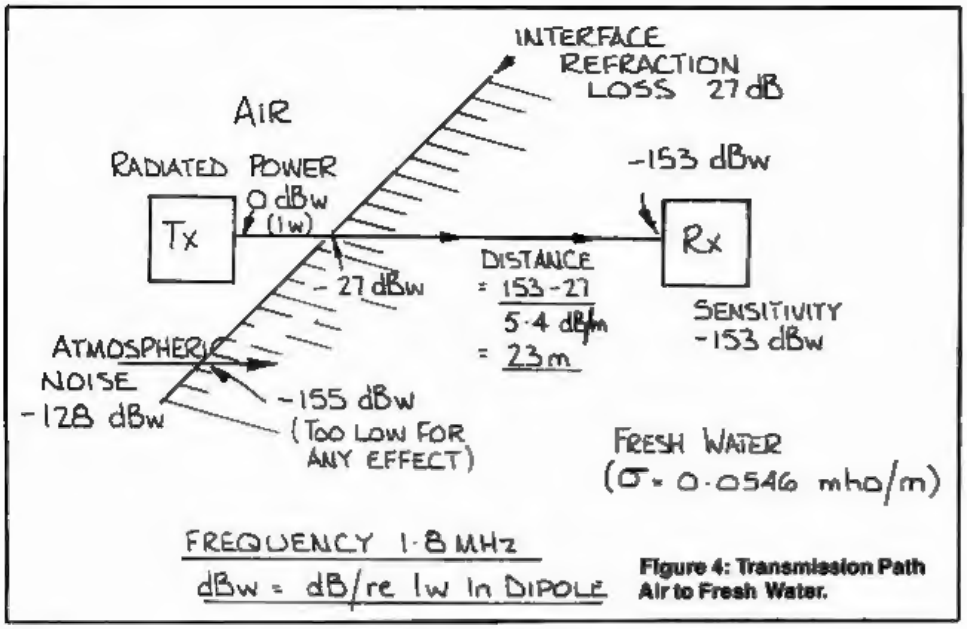


Figure 4: Transmission Path Air to Fresh Water.

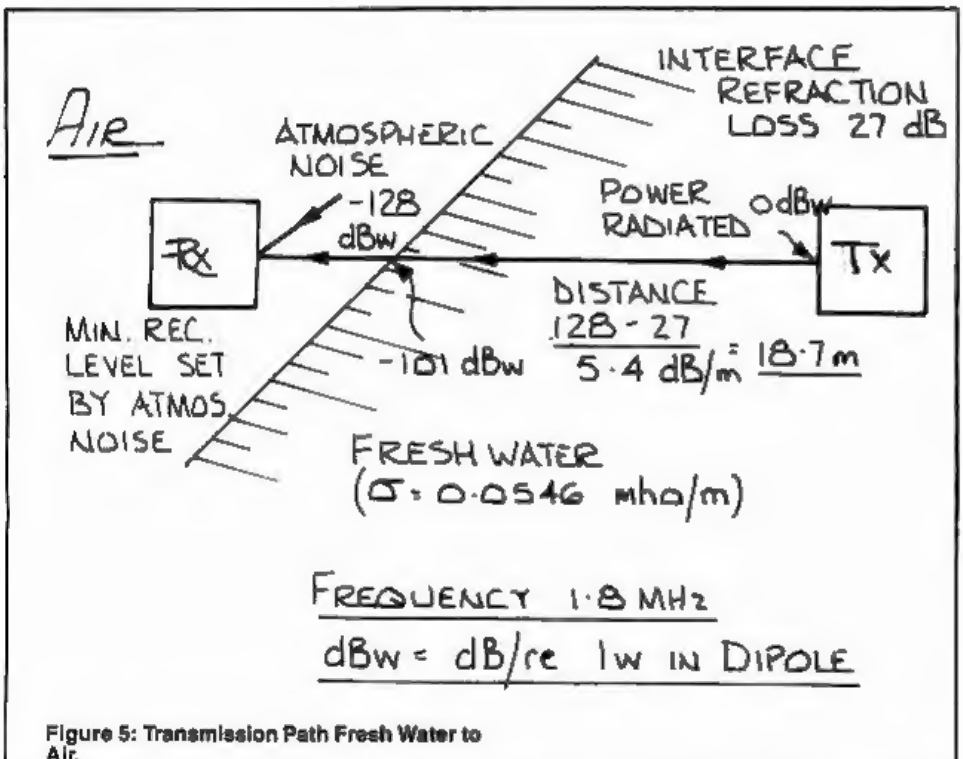


Figure 5: Transmission Path Fresh Water to Air.

Referring now to Figure 7, we have a transmitter with a reference power 0 dBW at one wavelength and this point is 1000 metres (or six wavelengths) from the water surface. Power level at the air/water interface is -20 log 6 = -15.6 dBW and transmission for a further 20 metres underwater is still possible.

Taking this type of transmission a little further, we now examine Figure 8. Here we have both transmitter and receiver below the water surface but 1000 metres apart. Communication over this distance via the water path is impossible but the signal can leave the water near the transmitter, travel via the air path and re-enter the water near the receiver. The signal suffers the interface loss twice (ie 54 dB) but attenuation over the 1000 metres is limited to that of the air path. So here is another technique by which two underwater stations might communicate over quite a large distance, limited essentially by the depth in water at which the stations are based.

In the examples given, actual transmission distance underwater is limited from 18 to 30 metres. This distance can be increased by increasing power or decreasing frequency. Increasing the radiated power to 100 watts would give 20 dB gain or an extra underwater distance of 3.7 metres (not a large increase). If a frequency of 100 kHz were available, attenuation would be 1.28 dB/metre and taking the example of Figure 6, distance would recalculate to the greater value of 120 metres. At this frequency, however, interface loss increases to 40 dB and in the example of Figure 4 (which includes interface loss) the distance would be a lesser 88 metres, but still greater than for 1.8 MHz.

Another point to consider, is that Adelaide water is not renowned for its purity of dissolved (or undissolved) matter and it is possible that water in lakes and rivers elsewhere might have lower conductivity than that of the Adelaide sample.

ANTENNAS

Design of underwater antennas is beyond the scope of this article, but a few interesting details can be discussed. Published references indicate that loop antennas, long wires and dipoles have been successfully used underwater at very low frequencies, their physical dimensions, in terms of a space wavelength, being much less than their equivalent in space.

Antenna conductors are insulated from the water to prevent leakage current direct to the conducting medium, but there is still coupled conduction into the medium which causes the radiation resistance to be considerably lower than that of the equivalent antenna in space. A radiation resistance of a few ohms can be expected for a halfwave dipole.

There is also the question of polarisation and directivity. According to Moore[2], a submerged horizontal electric dipole is equivalent in its field to a weaker vertical antenna at the surface. Most of the energy, radiated upwards from the antenna, is refracted at the surface into a vertically polarised, almost horizontally travelling wave, above the surface. This phenomenon helps to explain the technique used in Figure 8 to transmit signals horizontally above the water surface and to receive them in the reverse process.

Moore also points out that attenuation between one side of the submerged antenna and the other, is so great that a major contribution to the field at any point is primarily due to the nearest point on the antenna. Thus coordinates on an antenna pattern in a conducting medium are meaningless. There is, of course, a null off the end of a dipole and hence horizontal dipoles are more satisfactory than vertical dipoles for communication via the surface.

Antennas used in the sea have made use of the conducting sea as the actual radiating element. The signal is either coupled to the sea via connecting electrodes or by inductive coupling from an insulated loop. These techniques are possibly impractical for fresh water with much lower conductivity.

SEA WATER

As discussed earlier, attenuation of radio signals in sea water is so great that communication further than just below the surface is not possible unless very low frequencies (10 to 30 kHz) are used. Even if permission could be obtained to use frequencies in this band, there are other difficulties facing the amateur enthusiast:

1 Air to water refraction loss in this band is in the order of 60 to 70 dB.
2 Massive antenna dimensions are required, particularly for the above the surface antenna. (Even at 30 kHz, a wavelength is 10 km). Large transmitter powers are usually required to compensate for the high antenna losses inherent in the shortened low frequency antenna.
3 Atmospheric noise peaks to about 160 dB above thermal noise (KTB) at 10 kHz, limiting the minimum discernible receive level.

OTHER CONDUCTING MEDIUMS

Whilst the discussion has concentrated on transmission through water, the theories outlined can equally be applied to other conducting mediums such as the earth's crust. Typical applications include radio communications in underground shafts and caves.

The conductivity of the earth's crust varies widely with conductive over- burden between

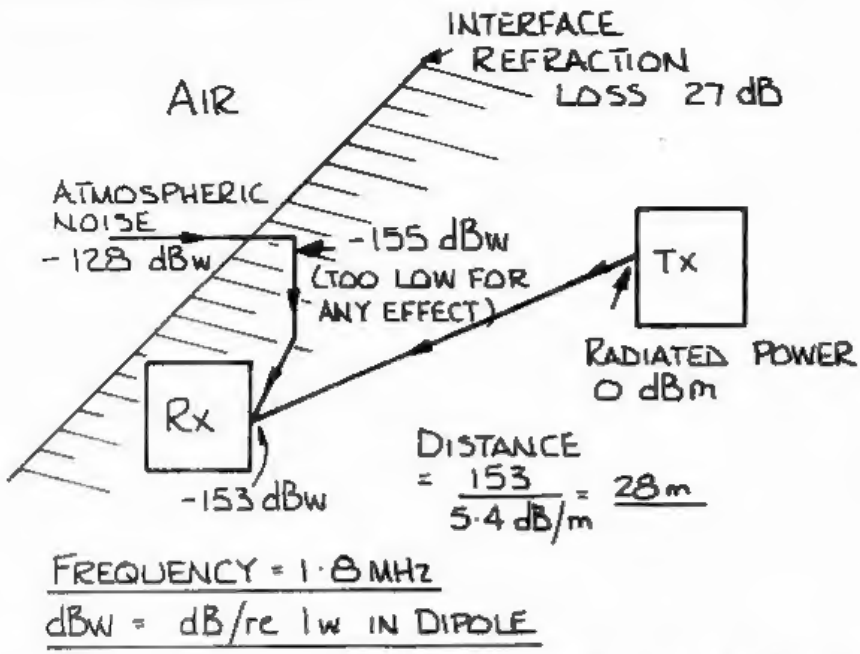


Figure 6: Transmission Path — Fresh Water Transmitter and Receiver Both Submerged.

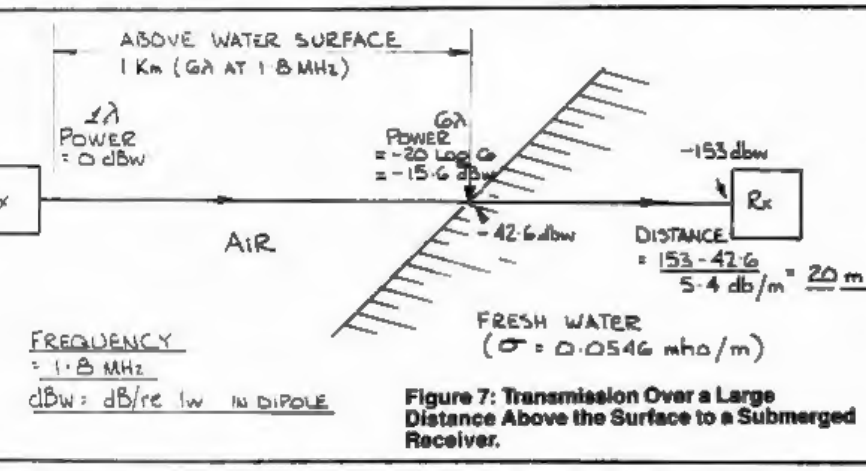


Figure 7: Transmission Over a Large Distance Above the Surface to a Submerged Receiver.

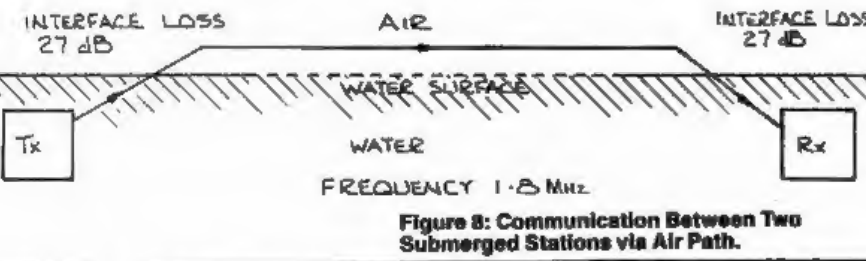


Figure 8: Communication Between Two Submerged Stations via Air Path.

10^{-4} and nearly 1 mho per metre and low conductivity rock less than 10^{-5} ohms per metre. Quite clearly, the success of the underground communications depends on the geological make up of the surrounding terrain.

CONCLUSIONS

Radio communication under the sea is not an attractive option for experiment by the radio amateur as it requires the use of very low frequencies, large antenna systems and very high powers.

Fresh water lakes and rivers have much lower electrical conductivity than the sea and underwater transmission distances (or depths) up to 30 metres appear feasible using the lowest frequency amateur band of 1.8 MHz. Even larger distances (or depths) could be achieved if a lower frequency band allocation were made available.

Communication between underwater stations or between a surface station and an underwater station could be achieved over much larger distances by utilising a transmission path above the surface and tolerating the air to water refraction loss.

Similar communications could be carried out from underground depending on the conductivity of the surrounding over-burden or rock.

References:

1 Reference data for radio engineers, ITT Chapter 27. Radio noise and interference.

2 MOORE, RICHARD R. *Radio Communications in the Sea*, IEE Spectrum, Vol 4, Nov 1967, pp 42-51.

3 HANSEN, R C. *Radiation and Reception with Buried and Submerged Antennas*, IEEE Transactions on Antennas and Propagation, May 1963.

4 WATT, LEYDORF and SMITH. Notes regarding possible field strength versus distance in earth crust wave guides.

Symbols used in Text

σ (Sigma)	Electrical conductivity (mhos/metre).
f	Frequency (Hertz).
λ (Lambda)	Wavelength (metres).
dB	Decibels.
dBW	Decibels reference one watt.
α (Alpha)	Attenuation constant (dB/metre).
d	Distance (metres).

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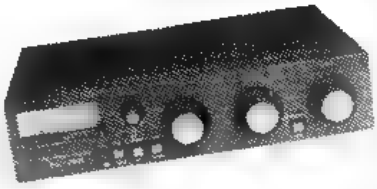

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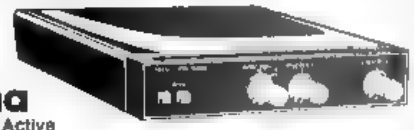

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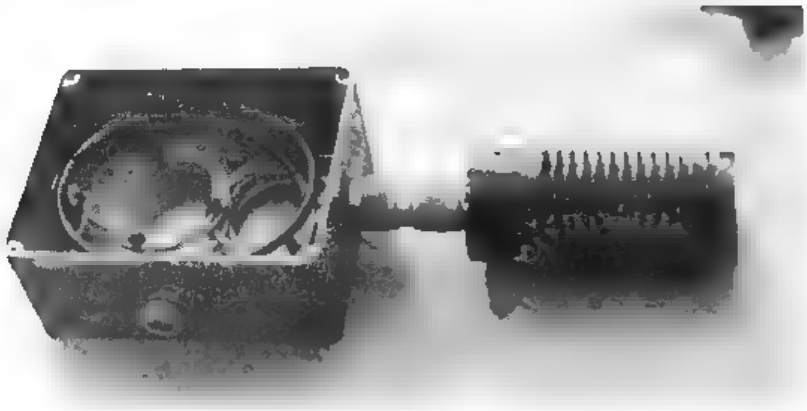
TWO METRE POWER DIVIDER

Ian Keenan VK3AYK
6 Pretoria Street, Caulfield South, Vic. 3162



Monitoring of more than one two metre FM channel at a time can be a problem even when using the triumph of modern amateur technology, the scanning transceiver.

Overall construction. A similar load to the one shown is available from Dick Smith (Cat D-7025).

Obviously, depending on the number of channels you are scanning and the traffic on each, you may miss *that important call* from a friend. The author usually monitors two channels at once on some obscure portion of the band. This then means that another aerial is required and, to prevent the house sprouting aerials (it is bad enough now according to my wife), I opted for the power divider approach. This relies on having one highly efficient aerial, then splitting the feeder through a four port divider to feed two transceivers. This divider must have high isolation between the opposite ports to which the transceivers are connected. If you are transmitting on one rig you certainly do not want 10 watts appearing on the aerial socket of the other set with, what would be, some rather catastrophic results!

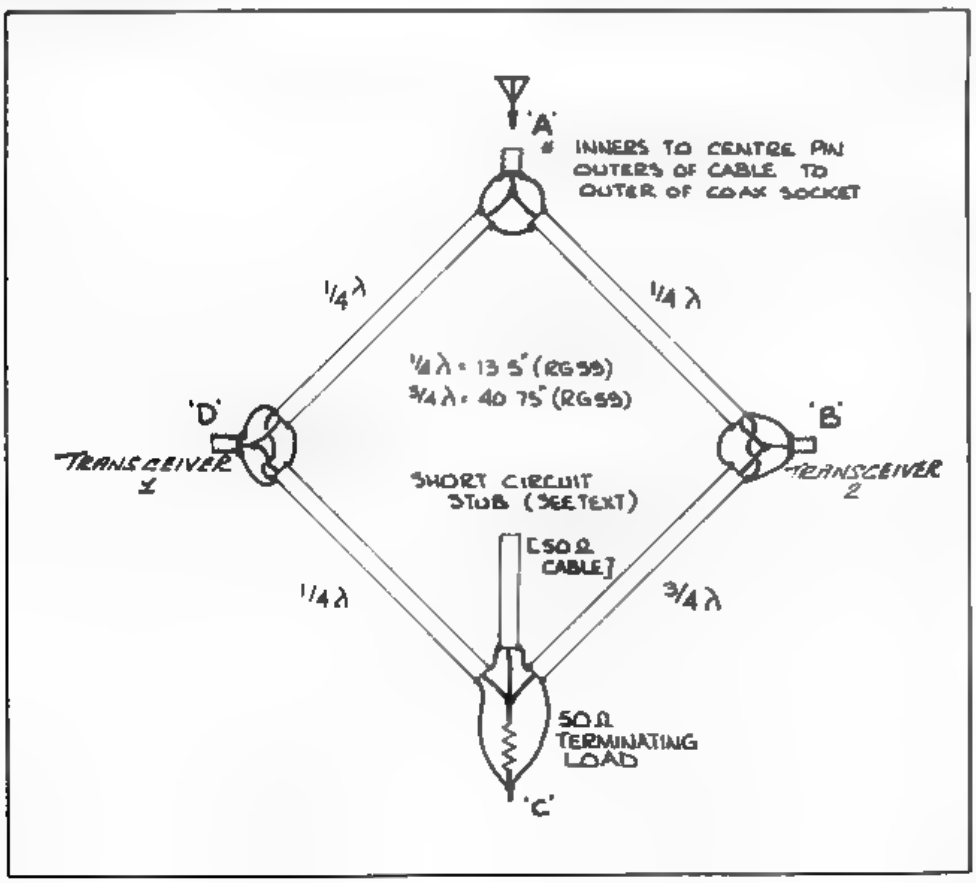
This divider will provide about 47 dB of isolation when tuned. This amount of isolation is sufficient, providing no more than about 10 watts is used.

It could be said that this is possibly more isolation than you would get using two aerials on the average mast in the back yard. As a rule of thumb, approximately 10 to 20 feet (3 to 6 metres) apart and similarly polarised, may exhibit about 20 dB of isolation. This obviously decreases if the antennas are closer or in the same plane where the coupling between them can be much greater. This divider does have one immediate disadvantage which is discussed later.

OPERATION

The hybrid power divider is a four port device made out of 70 ohm coaxial cable with electrical lengths as shown in Figure 1. With RF power applied at point D it splits two ways, one to aerial and the other to the load.

The power also continues around to Point B (from aerial and load directions) but, because of the electrical lengths of the coaxial cables, there is a 180 degrees phase relationship between the two, causing a cancellation at B. Operation of the same when power is applied to point B (there is then a phase cancellation at D). Because the power splits two ways when applied to D or B there is a power loss to the aerial (half the power goes to the load, the other half to the aerial). Some amateurs by tradition, have the habit of worrying about the last milliwatt they can get out of their radio, but it should be kept in mind that, by using a good quality feeder and a gain-type aerial, these losses can be compensated for. These days, modern commercial equipment seems to have excellent receive sensitivity, and because stations usually work across town, signals are usually quite large. In short, one should not be concerned about this insertion loss which, in practice, is about 3.5 dB.



CONSTRUCTION

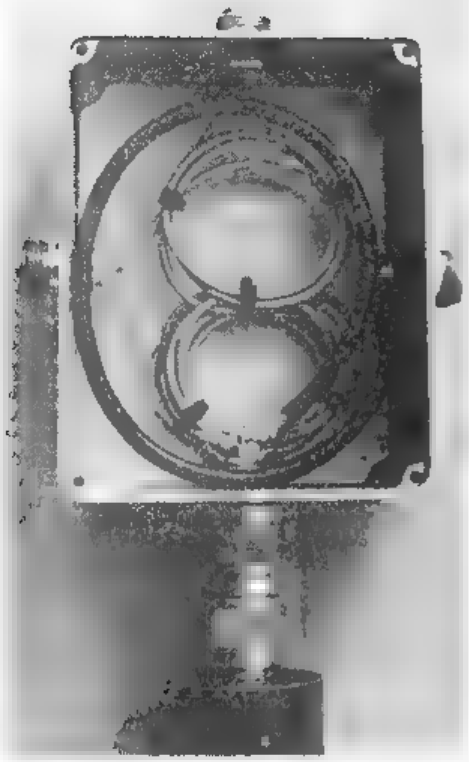
The divider was built into a 4.75 x 3.75 x 2 inch (120 x 95 x 50 mm) diecast box. I used RG179 coaxial cable for the tuned cable lengths because it is physically smaller and easier to handle than other types of cable. RG59 could also be used and is more readily available. The load resistance should be rated at about five watts for a 10 watt transmitter. The short circuit stub is made from RG58. If the power divider is to be used for receive applications only, the load can be reduced to a half watt carbon resistor and the stub omitted as isolation is then not so critical.

TUNING THE HYBRID DIVIDER

Connect an aerial to the unit (this should have a VSWR of 1.5:1 or less). Attach a sensitive 50 ohm RF indicating device, to either port B or D (see Figure 1). A suitable indicating device would be a VTVM connected across a 50 ohm resistor or, if you are lucky enough to have access to one, a spectrum analyser.

Now apply RF power from the opposite port. Starting off with about 15 inches (380 mm) of stub, pierce the coaxial cable at small intervals with a pin to form a short circuit.

Working from the end towards the load watch the RF indicator for minimum indication. At this point, remove the pin, cut the cable at that point and solder the inner of the cable to the outer. Swap the RF power source and indicating ports and check that the minimum reading is the same in both directions.



Tuned lengths of coaxial and short circuit tuning stub (RG58).

Tape the end of the stub and place it in the box. Connect the two transceivers to ports B and D and connect a power meter in the aerial circuit. With 10 watts out of either transceiver, about 4.5 watts should be measured at the aerial, port A.

I found that receiving on one transceiver and transmitting from the other produced desensitisation in the receiver to an incoming signal (depending on strength). However, with no incoming signal present (muted) no overload was noticed.

This type of power divider can be scaled up or down for any band that one may care to use it. Despite its disadvantages, the divider has proved useful in reducing the number of aerials in the antenna farm at my location!

TECHNICAL EDITOR'S NOTE

To ensure maximum isolation between ports B and D, the 70 ohm cable lengths should be cut as close to 90 (λ/4) and 270 (3λ/4) electrical degrees as is physically possible.

When testing the unit, it would be a good idea to determine (if possible) the absolute isolation between ports B and D after tuning for a minimum. This is to make sure that the available isolation does not result in excessive power being delivered to either front end. This isolation should also be checked over the full frequency range that it is desired to operate the hybrid.

For 10 watt transmitters, an isolation of greater than 40 dB is desirable. This will result in less than one milliwatt being delivered into the opposing front end.

At this power level, it is unlikely that any damage will be done to the front end.

—Photographs courtesy Bill Trenwith VK3ATW

IMPROVED ANTENNA FOR HAND-HELDS

Ian Nance VK2BIN
22 Truscott Street, North Ryde, NSW. 2148

An antenna mounted on a safety hat is more convenient for WICEN activities.

ON WICEN ACTIVITIES, when using a two metre hand- held, I find it is more convenient to clip the rig to my belt and hold an external microphone/speaker in the hand, or leave the hands free by using a boom headset.

However, a disadvantage of siting the transceiver there is the resultant attenuation of the radiated signal due to absorption by the body, particularly if using a shortened antenna in lieu of a quarter-wave.

Recalling the success experienced by Morton VK2DEX, with a helmet-mounted quarter-wave, I decided to build an antenna capable of being mounted on my safety helmet without the need to depend on a compromise ground plane or drill holes in the helmet, as WICEN helmets always remain the property of the Volunteer Rescue Association. I decided on a coaxial dipole and this is how I built and mounted it.

Materials required:

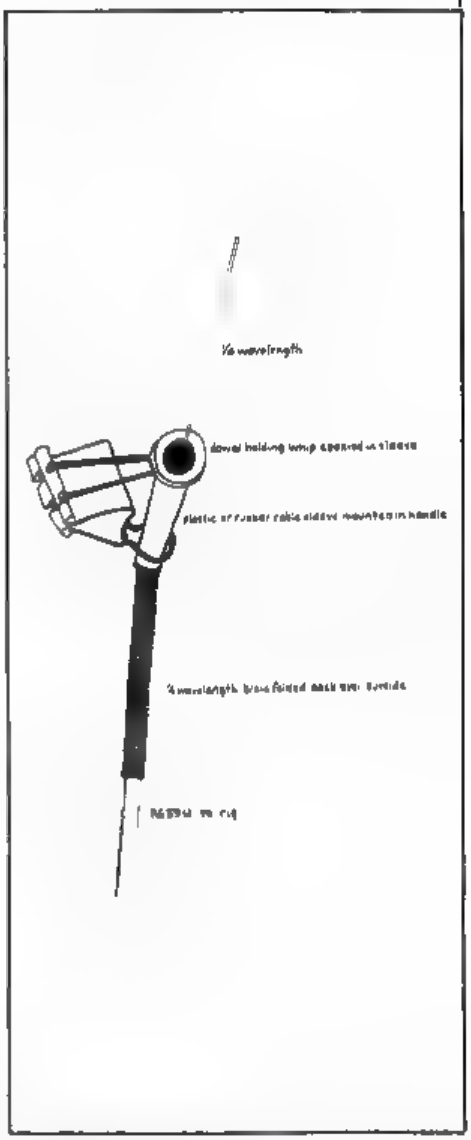
a quarter-wavelength of suitable springy wire for the radiating element
a spring paper-clip with wire handles
a tapered cable sleeve from a two-pin mains appliance socket
approximately one metre of RG59U
a piece of wooden dowel
suitable antenna plug for the rig

Remove the PVC insulation from one end of the coaxial cable for about 560 mm (22 inches), exposing the braided shield which is then rolled back carefully over the remaining PVC. It will help if the braid is pushed gently so that it teases out to a larger diameter and is then folded gradually over itself so that ultimately it lies over the cable back from the point where the PVC was removed. The reason for stripping at least 560 mm of insulation is that the braid, when rolled back, does not occupy the same length as originally exposed, so it is preferable to begin with more braid than needed and trim it back to a quarter-wavelength when it is finally positioned.

Tin the end of the braid to prevent unmeshing, then cut a piece of 10 mm (⅜") dowel to about 25 mm (1") length, drill a hole longitudinally in the centre to accept the radiating element. Cut this radiator to a quarter-wavelength and solder the coaxial inner to the bottom end. Seat the dowel in the tapered cable sleeve and epoxy resin into place.

Next wrap the exposed braid (the "earthy" element of the antenna) with insulating tape, support the cable sleeve in one handle of the paper clip using the other handle to steady the lower end of the sleeve and solder the antenna plug on the free end of the coaxial cable.

This antenna may be clipped anywhere on the rim of the helmet, but I prefer to wear it at the rear and allow the feedline to connect to the rig across my back (it is out of the way there). If the helmet rim is pushed well home into the jaws of the clip, the antenna will remain in position.



The coaxial dipole antenna has a lower angle of radiation than a quarter- wave ground plane and gives better performance at marginal distances. It is well worth using if you are committed to obtaining reliable communications with a low power hand-held over a path favouring lower angle of radiation. Where higher radiation angles are needed, such as from the floor of a valley to a high adjacent cliff-top or to a search aircraft, then the standard ground plane is probably a better choice. I am sure that WICEN operators will find this helmet-mounted antenna a decided advantage.

TECHNICAL EDITOR'S NOTE

The tip of the radiator should have a protective covering. A small cork or plastic bead ***firmly*** anchored to the tip will prevent the tip of the antenna sticking into a fellow worker when you bend your head down!

PHOTOPHONES REVISITED

A review of amateur optical communications

The following article began as a short article and finished with a life of its own!

Mike Groth VK5AMG
11 Branch Road, Stirling, SA. 5152

APART FROM LIMITED military applications, optical telephony remained a relatively impractical form of communication from the invention of the photophone in 1880, to the development of semiconductor light sources and detectors in the 1960s. While optical fibres have become a major component of modern telecommunications, and infra-red remote controls are incorporated in many domestic appliances, optical communication has been largely ignored by radio amateurs.

Construction projects for photophones have been published from time to time over the last 60 years, but there have been few reviews of optical communication and its potential as a medium for amateur voice and data communication. This article is a mixture of history, theory and personal experience, written with the intention of introducing optical communication to the general body of radio amateurs and possibly stimulating further experimentation in the oldest branch of wireless.

HISTORICAL DEVELOPMENT

Early Developments, 1878-1918

The invention of the selenium cell in 1872 and the telephone in 1876, made it possible to detect modulated light, and Mr A C Brown, of London, is generally credited with the first transmission of articulate speech over a light beam in 1878. Much of the pioneer work in optical telephony was carried out by Alexander Graham Bell and Sumner Tainter during 1879 and 1880, which was presented in a paper[1], read by Bell to the American Association for the Advancement of Science in August 1880.

The Bell Photophone (Figure 1), used a flexible plane mirror mounted at the end of a speaking tube, so that the sound pressure caused the mirror to change shape, modulating the beam intensity of the reflected light. The receiver was a selenium cell mounted at the focus of a parabolic reflector, and coupled to a battery and telephone receiver. Using this apparatus, Bell transmitted speech over a distance of 213 metres using sunlight, and shorter ranges were covered using various lamps as a light source.

Interest in photophones appears to have been dormant until the turn of the century, when German and Austrian experiments with current modulated carbon arc lamps, led to the production of a military photophone by the Siemens- Halske company in 1917. This unit used a current modulated carbon arc transmitter and a selenium cell receiver to give a night range of about eight kilometres. The German Navy was reported to have used voice modulated searchlights for ship to ship communication up to a distance of seven miles (11 km).

The British were also active in photophone research during the First World War, and the vibrating mirror modulator was developed by Rankine as part of a research project for the Admiralty in 1916[2]. Other methods of producing modulated light including current modulation of carbon arcs and fine filament lamps were found to have very poor modulation characteristics.

The selenium cell was the only photoelectric detector available until the development of the thalofide (oxidised thallous sulphide) and molybdenite detectors in 1917. These had a lower noise level than selenium and a faster response to infra-red radiation.

An experimental photophone was developed in the USA by the Case Research Laboratories in 1916, which used a pressure modulated acetylene lamp (Figure 4) in the transmitter, and a thalofide cell with a valve amplifier in the receiver. A clear night range of eight kilometres was claimed with 24 inch (600 mm) reflectors at each end.

1919-1935

Improvements were made to optical modulators and detectors in the 1920s, by motion picture engineers developing the optical sound tracks on movie films. Photophones became a technical novelty for display at industrial exhibitions and science fairs, with the occasional construction project in the popular radio magazines.

Military Photophones, 1939-1950

There was renewed military interest in optical telephony in the 1930s and the German Army introduced the Zeiss Lichtsprecher infra-red photophones in 1935. The light source was a tungsten filament lamp with an infra-red transmitting filter, which was modulated by a vibrating mirror (or prism in the Li80). The receiver used a lead sulphide detector with an infra-red filter and a valve amplifier. They were virtually unaffected by daylight, with a clear weather range of three kilometres for the Li 50/60, to nearly 14 km for the Li 250/130.

The Japanese Army visible light photophone incorporated a vibrating mirror modulator and a caesium photocell detector, with an operating range of about one kilometre in daylight and two and a half kilometres at night. An Italian Army photophone used a current modulated filament lamp as the light source but few details appear to have been published outside of the military reports.

Both German and American Navies used high pressure vapour lamps as modulated infra-red sources for navigation, identification and short range communication. The Germans employed mercury arc lamps of 500 to 2000 watts, while the Americans developed the caesium arc lamp. Some military laboratories continued the development of high pressure arc lamps for optical communication until the 1950s.

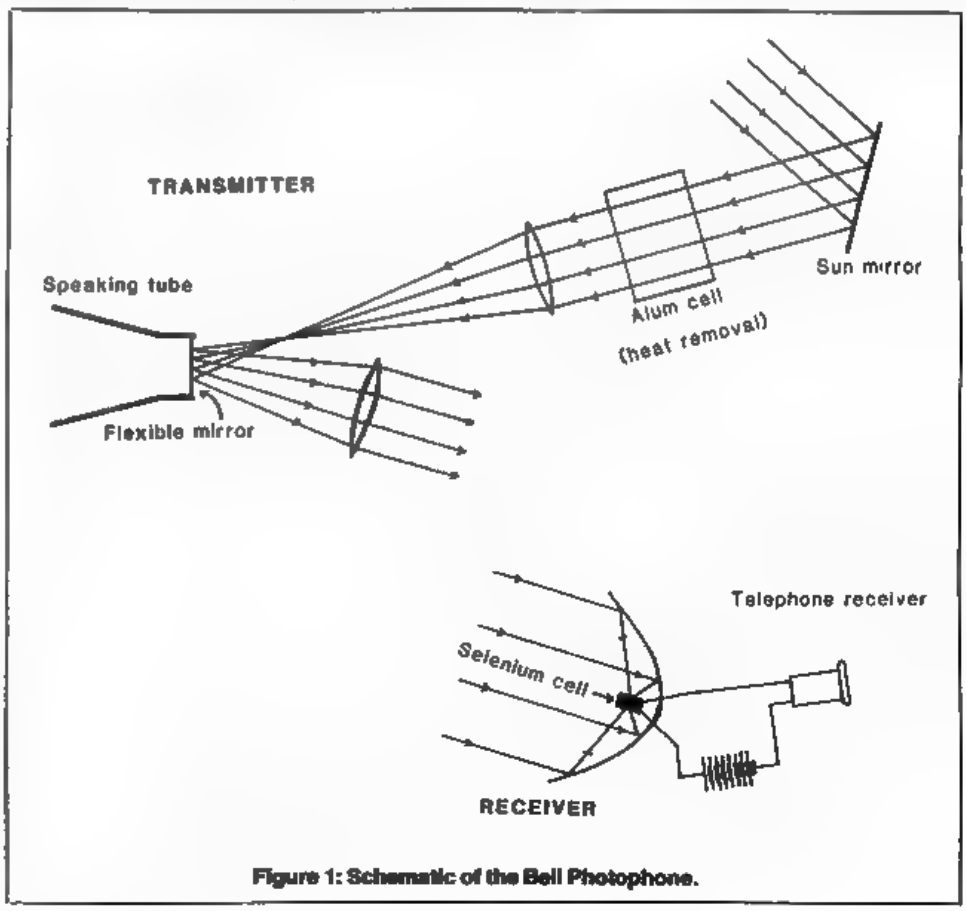


Figure 1: Schematic of the Bell Photophone.

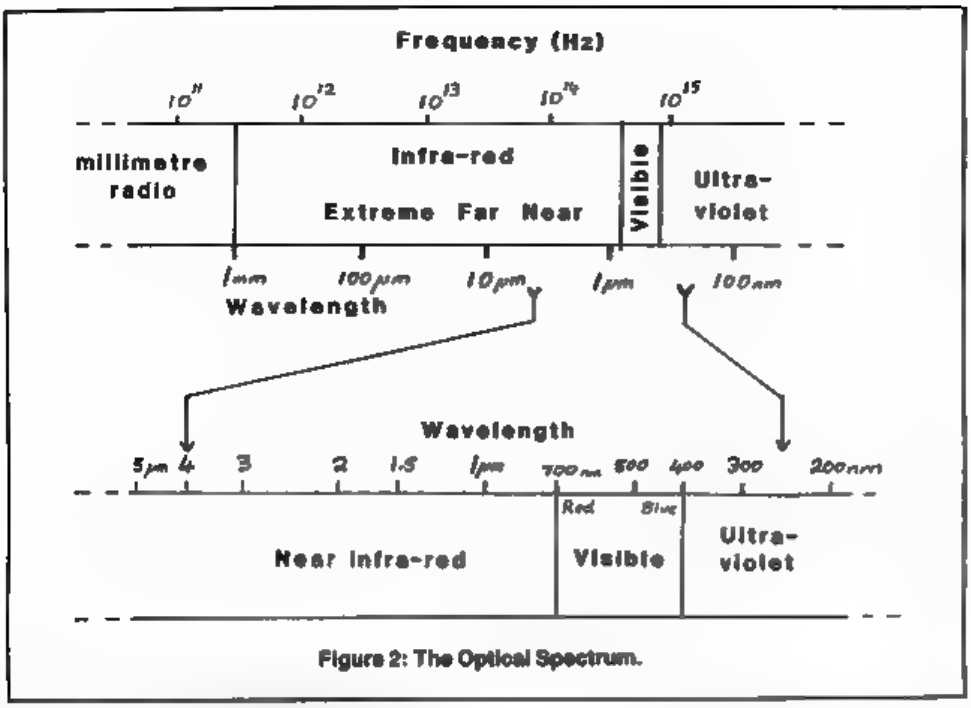


Figure 2: The Optical Spectrum.

Post War Amateur Developments

From 1945, the occasional letter appeared in the amateur journals describing experiments with current modulated light globes, but with the development of transistors and photodiodes there was a small but scattered group of amateurs experimenting with photophones in the 1960s. Most equipment used current modulated torch globes and phototransistors to transmit distorted speech, but some optical links using gas discharge tubes could transmit high fidelity speech and music.

Following the invention of the laser and infra-red light emitting diodes, there was an increased amateur interest in optical transmission between about 1966 and 1972, when several speech and video contacts were made over distances of 100 km or more. Despite the rapid advances in the commercial application of optical communication since 1970, there has been little serious interest in extending amateur radio into the optical part of the electromagnetic spectrum.

OPTICAL THEORY

It has been assumed that the readers of this article have a basic understanding of optics including the properties of lenses and mirrors. A simple description of some more advanced optical concepts has been included to assist in the later discussion of light sources, detectors, and optical systems.

Light may be loosely defined as electromagnetic radiation having a wavelength between 300 nm (3×10^{-7}m) and 3μm (3×10^{-6}m) which corresponds to a frequency range of 10^{14} to 10^{15} Hz. This definition includes visible light with a wavelength between 400 nm and 700 nm as well as the long wavelength ultra-violet and near infra-red parts of the optical spectrum as shown in Figure 2. Optical communication systems usually operate in the visible or near infra-red.

Light is emitted and absorbed in small discrete energy quanta called *photons*. The energy carried by each photon is determined by its frequency or wavelength according to the formula;

$E = h\ f$ OR $E = h\ c/\lambda$

where E = photon energy (Joules)
f = frequency (Hertz)
h = Planck's constant (6.63×10^{-34} j.s)
c = velocity of light (3.00×10^{8} m/s)
λ = wavelength (m)

The spectrum of a light source reflects the energy of the excited electrons. The thermal electrons in a hot body emit broadband radiation whose dominant wavelength is a function of the absolute temperature as shown in Figure 3. The 2500 degree K curve is representative of the spectrum of the white light from a filament lamp or incandescent gas mantle.

The monochromatic light from a sodium vapour lamp, neon globe or LED has most of its radiant energy concentrated into a limited range of wavelengths determined by the differences in the atomic energy levels in the source. A monochromatic light source has some advantages in an optical communications system as it allows the receiver to be tuned to the transmitter's wavelength.

The short wavelength limit for an optical link is set by atmospheric absorption of ultra-violet wavelengths below 300 nm. The long wavelength limit is set at about 3 μm by thermal background radiation and rising detector noise. Glass lenses and windows are transparent to wavelengths from 350 nm to nearly 2.5 μm while quartz will transmit infra-red to 3.5 μm. Most transparent plastics are suitable for infra-red operation out to a wavelength of 2 μm (2000 nm).

OPTICAL TRANSMITTERS

Optical Intensity

An optical transmitter generates a beam of intensity modulated light either by modulating the intensity of a light source or by passing the light from an unmodulated source through an optical modulator. In either case, the effectiveness of the transmitter is a function of the transmitter's beam intensity and the depth of modulation.

Because light sources have a finite size and do not radiate equally in all directions four parameters (see Figure 4) are used to describe optical brightness and intensity. These are;

FLUX (F)	The optical power (watts).
INTENSITY (I)	The power radiated per unit solid angle in a given direction (watts steradian^{-1})
ILLUMINATION (E)	The optical power per unit area (watts metre^{-2})
LUMINANCE (L)	The intensity per unit source area (watts metre^{-2},steradian^{-1}).

For a point of intensity, I radiating equally in all directions the total flux radiated is $4\pi I$ watts.

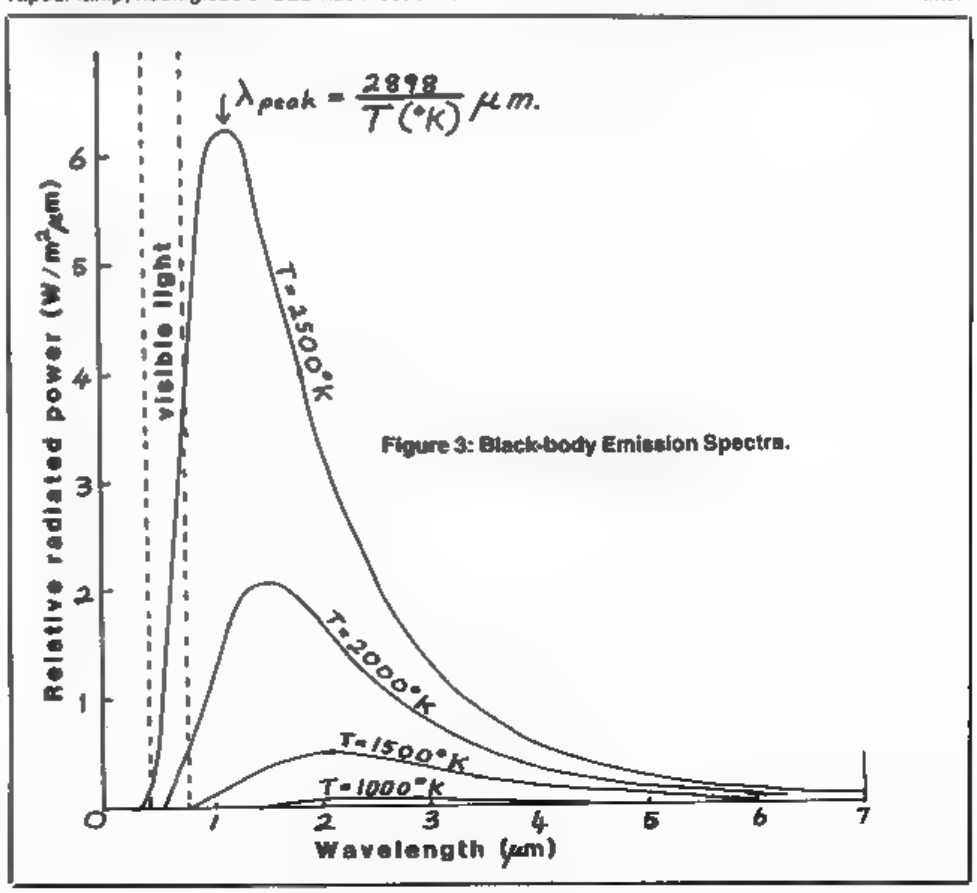


Figure 3: Black-body Emission Spectra.

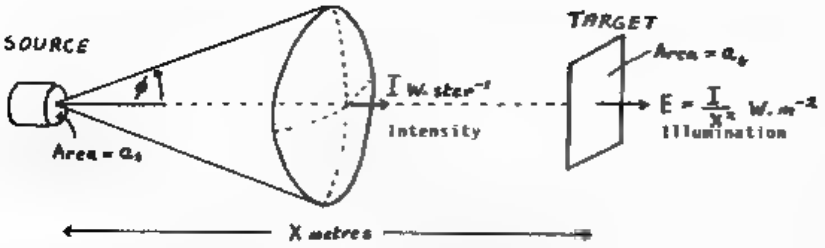


Figure 4: Optical Power Parameters.

Luminance of the source: L = I/a_s watts.m^{-2}.steradian

Solid angle in cone = $2\pi(1 - \cos\phi)$

Optical Flux emitted into cone: F = $2\pi(1 - \cos\phi)$ watts

Optical Flux falling on the target: F_t = E.a_t watts

Visible light photometry is based on a white light standard, the candela, and visual brightness comparisons between light sources. The unit of luminous flux is the lumen, and a light source with a luminous intensity of one candela is emitting one lumen of visible light per steradian. The candela replaces the older unit of the candle-power originally based on the intensity of a sperm wax candle.

A watt of green light at the wavelength of peak response of the human eye (555 nm) is equivalent to a luminous flux of 682 lumens. The luminous efficiency for light of other wavelengths is reproduced in Figure 5, which may be used to estimate the radiant power from luminous flux measurements.

Transmitter Optics

The simplest form of optical transmitter consists of a modulated light source mounted at the focus of a lens or mirror as illustrated in Figure 6. The intensity of the transmitter beam is given by:

$$L_{beam} = \frac{G \cdot D^2}{d_s^2} \qquad L_{source}$$

Where G is a geometric correction factor for the f/D ratio of the optical system (Figure 7). Provided the focal length is not too short, the output lens (or mirror) will have the same luminance as the source, and the beam intensity will be a function of the source luminance and the lens area

The divergence of the transmitter beam (Θ_b) is determined by the ratio of the source diameter and the focal length. The use of a more intense source with the same luminance will increase both the power and divergence of the transmitter beam but the beam intensity will remain unaltered. An optical system with a very low f/D ratio such as a deep parabolic reflector will give a very high beam power. But it can be seen from Figure 7 that the beam intensity will be less than that produced by a lens or mirror of the same diameter and moderate focal length. This apparent contradiction arises because the beam divergence increases at a greater rate than the total beam power as the focal length is reduced

A very narrow beam can make the transmitter difficult to align, especially in an infra-red system where the beam is invisible. For an optical transceiver the transmitter beamwidth should be wider than the receiver's field of view so that the transmitter will be correctly aligned when the receiver is aimed for the maximum signal

Modulated Filament Lamps

A tungsten filament lamp has a high luminance in the visible and near infra-red (typically 10^5 W.m^{-2}.sterad^{-1}), but the poor modulation of the light output (Figure 8) reduces the effective modulated luminance to the order of 100 W.m^{-2}.sterad^{-1}. Despite the low depth of modu-

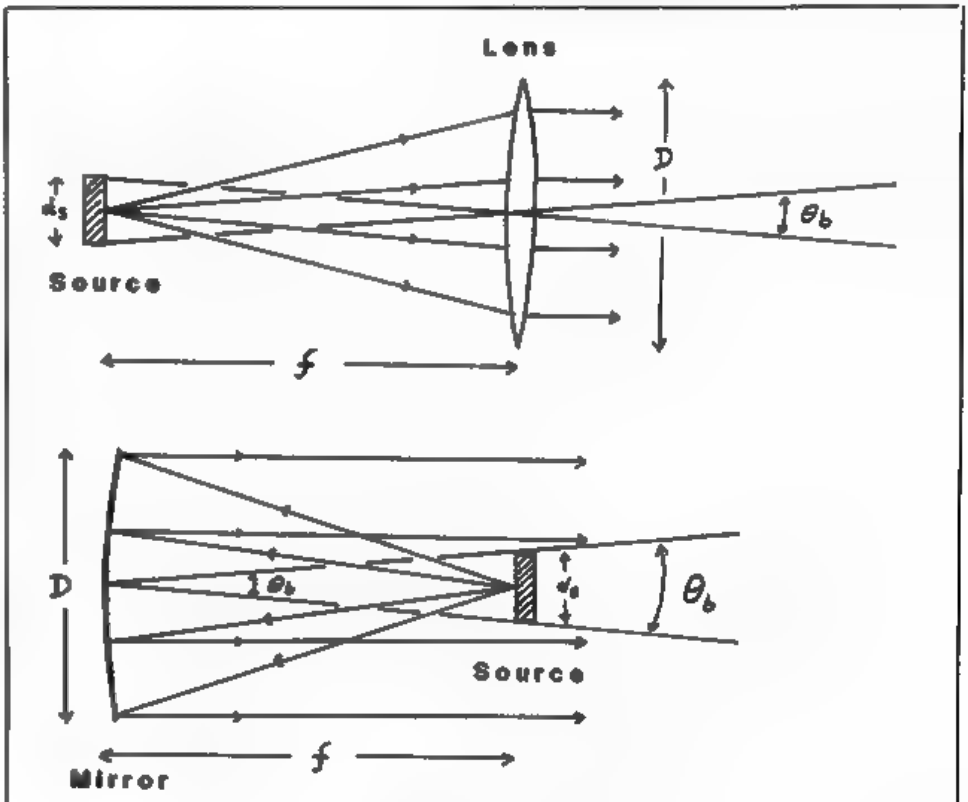


Figure 6: Transmitter Optics.

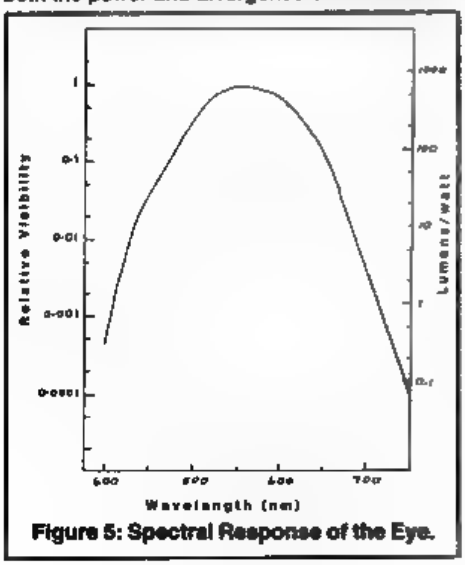


Figure 5: Spectral Response of the Eye.

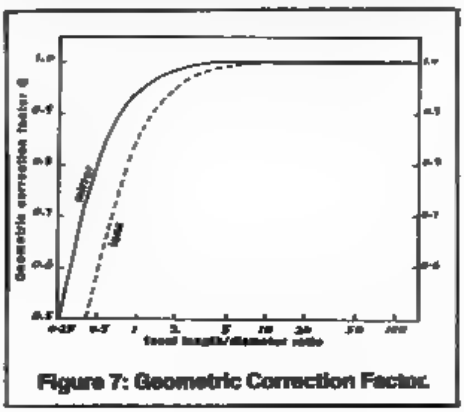


Figure 7: Geometric Correction Factor.

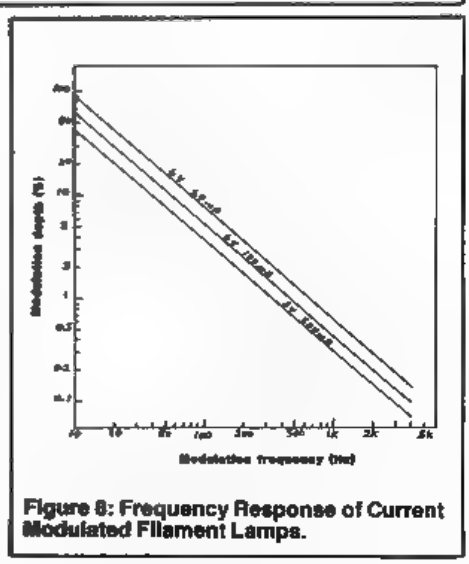


Figure 8: Frequency Response of Current Modulated Filament Lamps.

lation and considerable distortion current modulated torch globes were widely used in amateur photophones for voice communication over distances up to a kilometre on a clear night.

Gas Discharge Lamps

Low pressure gas discharge lamps including neon bulbs and fluorescent lamps can be modulated to 10 kHz or more, but their luminance is very low (typically 10 - 20 $W.m^{-2}.sterad^{-1}$). A gas discharge has a non-linear relationship between voltage, current and light output, but speech and music can be reproduced with reasonable fidelity using pulse width modulation, or a high frequency bias signal as in a tape recorder.

High pressure sodium and mercury vapour lamps are widely used for floodlighting, factories and street lighting. They are readily available with power ratings from 70 to 2000 watts. The luminance, typically $6000W.m^{-2}.sterad^{-1}$), is almost independent of the wattage rating and lamps of the 100 watt size would be suitable for amateur experimentation. The audio modulation characteristics of these lamps is not known but published data indicate that better than 50 percent modulation of the light output could be expected for frequencies up to five kilohertz.

The main disadvantages of high pressure lamps are the relatively high cost, limited life (500 to 2000 hours), and the long warm-up time. Sodium and mercury vapour lamps require at least 10 minutes operation to evaporate the metal in the lamp and produce their full light output. An optical transceiver with a high pressure vapour lamp would have to run its transmitter continuously with a shutter to cut the beam off during reception.

Light Emitting Diodes

Light emitting diodes are junction diodes made from compounds of gallium, aluminium, arsenic and phosphorus, which emit nearly monochromatic light when forward biased. The emission wavelength depends on the chemical composition of the diode crystal and ranges from 930 nm in the near infra- red for gallium arsenide (GaAs), to blue light at 500 nm for aluminium phosphide diodes.

The light emitting diode is the most convenient light source currently available for amateur optical communication. The output is proportional to the forward current and may be modulated to frequencies exceeding one megahertz. The optical properties of several common light emitting diodes are summarised in Table 1.

Table 1: Optical Properties of Common LEDs.

LED Type	Emission wavelength (nm)	Maximum current (mA)	Luminous intensity (mcd)	Radiant intensity (milliWatt)	Luminance @ I_{max} ($W.m^{-2}.sterad^{-1}$)
Green diffused	585	40	12	0.02	1.0
Bright Green Yellow	565	40	140	0.23	11.0
diffused Orange	585	40	12	0.02	1.0
diffused	635	40	18	0.10	5.0
Red diffused	697	40	8	0.77	40.0
Bright Red	660	50	500	15.00	750.0
GaAlAs IR (XC 880)	880	60	—	25.00	1250.0
GaAs IR (CQY89)	930	120	—	20.00	1000.0

It can be seen that the efficiency and power output of a LED decreases with the emission wavelength, and an infra- red emitting diode has much greater output flux than a green LED for the same drive current. A high intensity red LED is a suitable modulated light source for demonstrations and experiments as the visible radiation simplifies the optical adjustments.

High powered GaAs and GaAlAs infra-red emitting diodes are available with peak output powers of several watts but the luminance of the source is probably not significantly higher than for smaller diodes. The efficiency and power output of a LED is temperature dependent (Figure 9) and some form of heat sinking is necessary if operating a diode near its maximum current.

Most light small emitting diodes are supplied in a transparent plastic package with a domed top which acts as a lens and increases the intensity of the light along the diode axis. The lens does not increase the source luminance but generates a bright halo as illustrated in Figure 10. The effective luminance may be estimated by assuming the source diameter is equal to the diameter of the diode.

Mechanical Modulators

A variety of mechanical devices have been devised over the past 108 years to impress voice modulation on a beam of light. As it is impossible to cover these in detail this review has been restricted to the basic principles of some of the more successful designs.

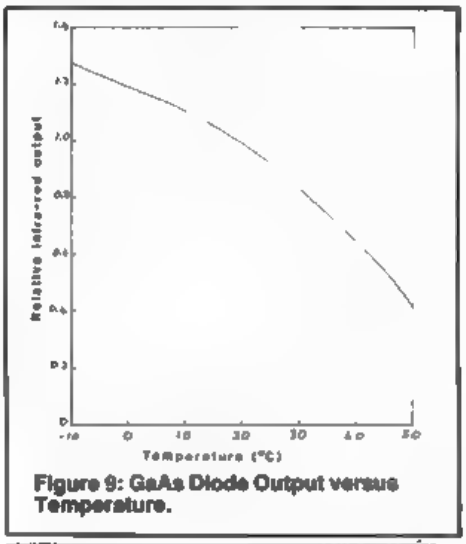


Figure 9: GaAs Diode Output versus Temperature.

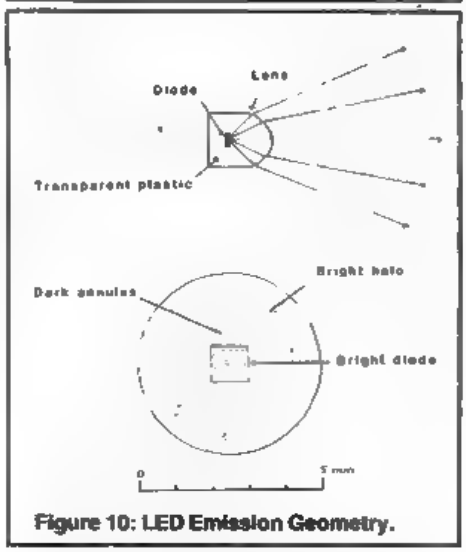


Figure 10: LED Emission Geometry.

The intensity of a light beam may be modulated by altering the optical flux in the beam with a variable transmission device or by changing the divergence of the beam. The latter approach was adopted by Bell in his 1880 photophone (Figure 1) which used a flexible mirror to vary the divergence of the reflected beam in sympathy with the sound pressure.

A modern version of the Bell modulator may be constructed by mounting a sheet of aluminised plastic or a thin glass mirror in front of a loudspeaker as shown in Figure 11. There should be a good seal between the loudspeaker rim and the mirror to achieve a tight acoustic coupling.

A simple modulator for use with a small filament lamp is drawn in Figure 12 where the flexible mirror and the lens form an optical system of variable focal length. The optical path from the lamp to the lens should be slightly shorter than the focal length so that the filament will be in focus at the maximum concave curvature of the mirror. This modulator is most effective with a torch globe having a short narrow filament.

The flexible mirror is not a linear modulator and the distortion rises rapidly with increasing modulation depth. Up to 30 percent modulation is possible with a very flexible mirror but a transmitter using a glass mirror is unlikely to achieve more than about five percent modulation of the beam intensity.

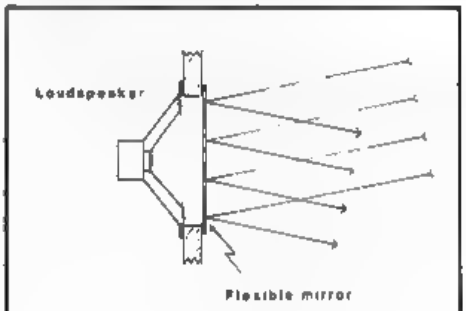


Figure 11: The Flexible Mirror Modulator.

The vibrating grid modulator is constructed from a pair of identical grids, each having equal transparent and opaque strips. One of the grids is fixed and the other is attached to the voice coil of a loudspeaker driver as shown in Figure 13. The two grids have a static displacement of half a strip width. Driving the voice coil with an audio signal will modulate the transmitted light power about its quiescent value of a quarter of the incident optical flux.

The performance of the system will depend on the fineness and accuracy of the grids as well as the mass and frequency response of the moving grid. The grids with strips about one millimetre wide could be a pair of photographic transparencies or etched from a thin sheet of metal. The vibrating grid concept was independently suggested by Alexander Graham Bell in 1880, and by Sir William Bragg in 1915, but it was impractical with the acoustic drive systems available at the time.

The problems associated with the moving grids were overcome by Rankine in 1915 by using fixed grids and an optical lever as illustrated in Figure 14. The grids were located at the radius of curvature of the concave mirror which formed an image of the first grid in the plane of the second. A small rotation of the mirror will move this image over the second grid and modulate the luminance of the image formed by the second lens. The light from this image is collimated by the output lens to produce the main transmitter beam.

The rotation of the mirror may be produced by a high speed galvanometer or a loudspeaker voice coil via a lever and fulcrum. Despite its greater complexity the oscillating mirror modulator was the most successful mechanical design. It was used by the Japanese and Germans in their military photophones during the 1930s.

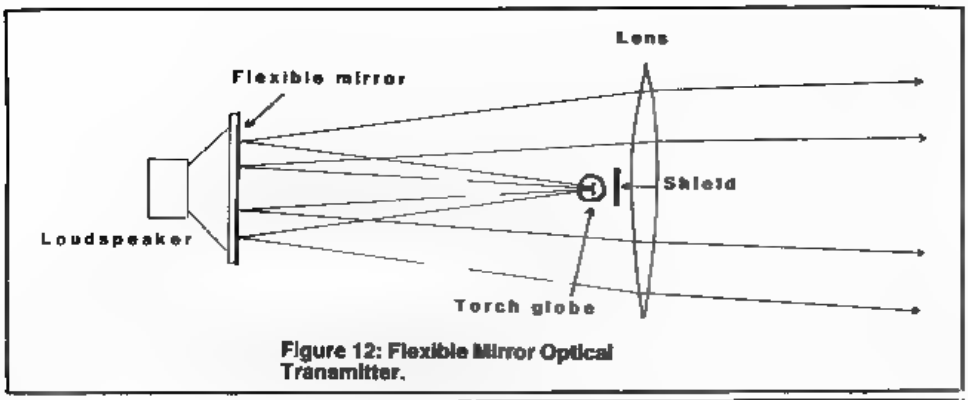


Figure 12: Flexible Mirror Optical Transmitter.

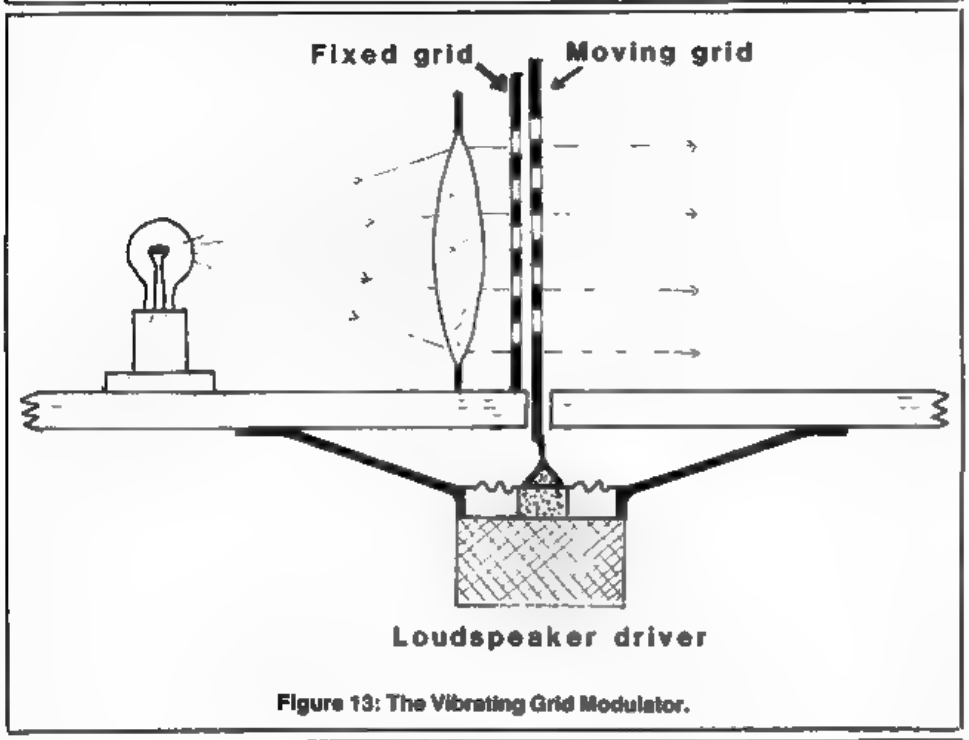


Figure 13: The Vibrating Grid Modulator.

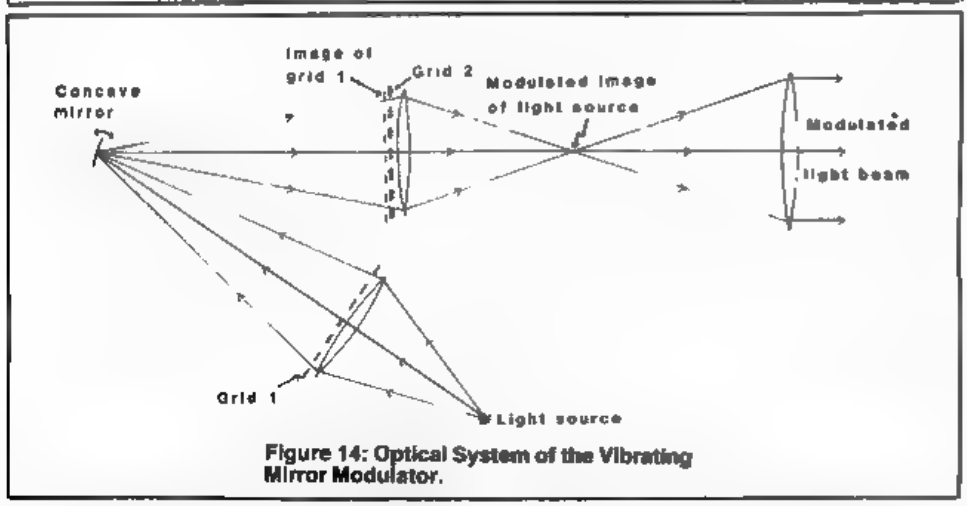


Figure 14: Optical System of the Vibrating Mirror Modulator.

Several other mechanical modulators have been developed using internally reflecting prisms or interferometers with movable plates. They have not been included in this review as they are precision devices which would not be suitable for amateur construction.

Electrical and Magnetic Modulators

The Kerr Cell is a glass cell fitted with parallel electrodes and filled with nitrobenzine which becomes doubly refracting in an electric field. The cell is mounted between a pair of crossed polarisers (Figure 15) whose planes of polarisation are at 45 degrees to the electric axis of the Kerr Cell. In the absence of an electric field no light is transmitted by the second polariser. When a voltage is applied to the electrodes the Kerr Cell becomes doubly refracting. The light emerging from the cell is elliptically polarised. As this now has a polarisation component aligned with the second polariser some will be transmitted.

The optical path difference between the two polarisation components in the cell is proportional to the square of the applied voltage with a response time of less than one nanoseconds. Very strong electric fields are required to open the shutter. A Kerr Cell is often operated with an RF drive. The light will be chopped at twice the excitation frequency.

Caution must be exercised when experimenting with Kerr Cells, as very high voltages are involved and nitrobenzine is very poisonous. It is also a powerful solvent. It will attack most plastics. A fatal dose can be absorbed through the skin.

A magneto-optic modulator (Figure 16) utilises the Faraday rotation of a beam of polarised light shining along a magnetic field. Most transparent materials exhibit a very small Faraday rotation. The effect is strongest in ferro-magnetic materials. An experimental voice modulator was developed in the 1960s using a thin section of yttrium-iron-garnet, which is transparent to near infra-red and exhibits a large Faraday rotation.

Lasers

A laser is a monochromatic light source in which the electron transitions have been synchronised by optical feedback so that the photons are in phase with each other and the light is coherent. Coherent light has the properties of a continuous wave, with a very narrow spectral bandwidth.

Lasers are best known for their high optical power output. Gas lasers producing over a kilowatt of optical flux are in regular use in industry for cutting cloth, wood and metals. The argon laser is widely employed for surgical procedures and solid state lasers with peak output powers of a terawatt (10^{12}W) or more, probe the atmosphere and measure distances to satellites.

The most common laser for optical communications is the semiconductor or diode laser which is a modified infra-red emitting diode that generates coherent radiation. The luminance is much higher than a normal infra-red emitting diode with a very narrow spectral spread. The infra-red is emitted with a divergence of about 10 degrees and can be current modulated to several megahertz.

The other common laser to which amateurs are likely to have reasonable access is the helium-neon gas laser which emits up to 20 mW of red light with a wavelength of 632.8 nm. The light is emitted in a thin parallel beam. The He-Ne laser is widely used in teaching, science, engineering and surveying. The gas discharge may be powered by a DC current or an RF signal, and a 10 metre AM transmitter can be used as a exciter for photophone experiments.

The parallel beam of light emitted by a laser will start to diverge after a short distance as a result of diffraction but this can be reduced by expanding the beam through an astronomical telescope as depicted in Figure 17. The diffraction spreading for a 100 mm diameter beam of coherent red light is about 15 microradians. But an expanded laser beam is observed to diverge at nearly 200 microradians (200 mm/km or 1 foot/mile) probably as a result of atmospheric turbulence and imperfections in the telescope.

OPTICAL RECEIVERS

An optical transmitter generates a beam of intensity modulated light, which is received by a photodetector and converted directly to an audio frequency electric current. This is similar to the early days of amateur radio when incoherent signals from spark transmitters were received by crystal sets. Experimental coherent fibre-optic receivers have been demonstrated in several research laboratories but a coherent optical communication system for

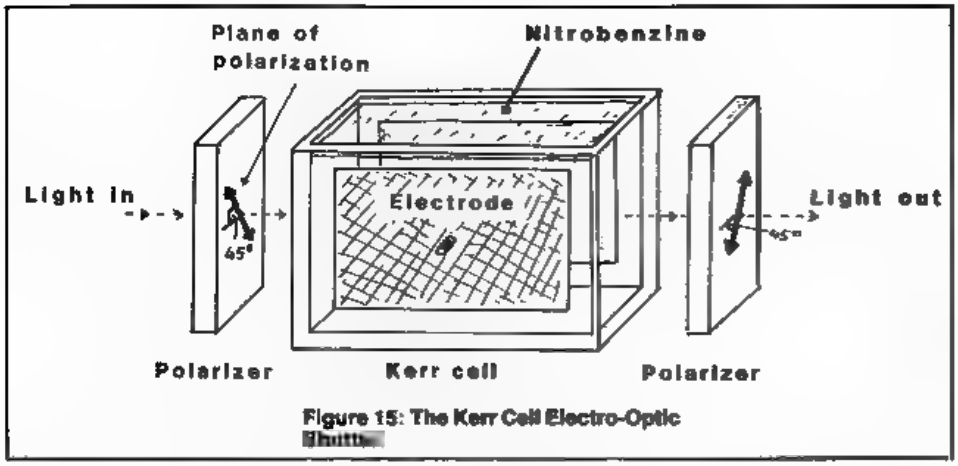


Figure 15: The Kerr Cell Electro-Optic Shutter

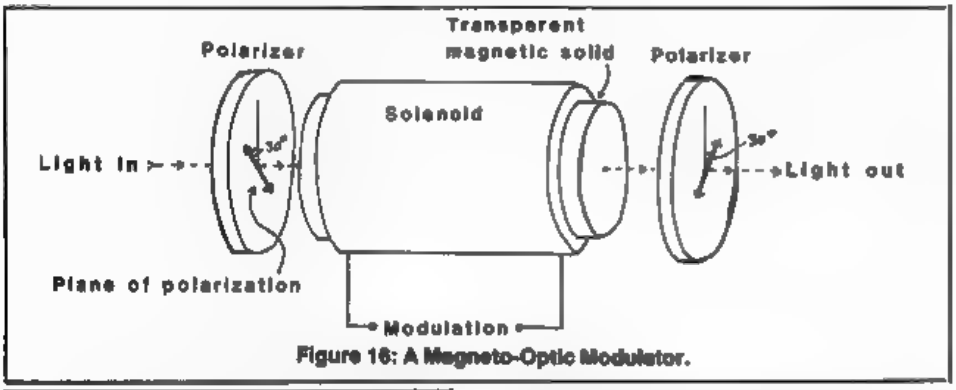


Figure 16: A Magneto-Optic Modulator.

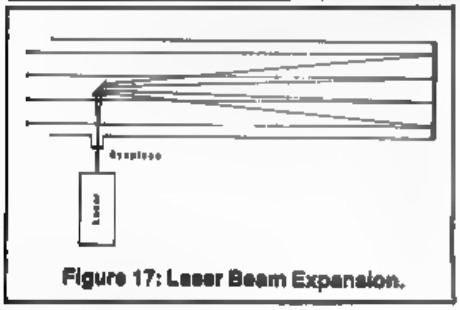


Figure 17: Laser Beam Expansion.

atmospheric transmission is not likely to be available for some time.

Detector Theory

A photodetector is a quantum device which uses the photon energy of the light to excite electrons and generate a current proportional to the energetic photon flux. All photon detectors have a cut-off wavelength λ_c which corresponds to the minimum photon energy required to excite an electron in the detector. In an ideal detector each incident photon with a wavelength less than λ_c will liberate an electron but the quantum efficiency of a real detector ranges from 0.03 to 0.5 electrons/photon.

The sensitivity of a photon detector is the detector current generated per watt of incident optical flux. It is inherently wavelength dependent (Figure 18) with the maximum sensitivity at a wavelength slightly shorter than λ_c. Radiation with a wavelength longer than λ_c will not be detected. The short wavelength limit is usually determined by absorption in the detector windows.

A detector will generate white noise from electrical leakage, thermal excitation and background light. The dark current is proportional to the square root of the detector area and increases rapidly with the temperature and cut-off wavelength. The thermal noise contribution from a detector with a cut-off wavelength in the visible part of the optical spectrum will generally be less than the amplifier noise. Detectors sensitive to far infra-red radiation have a very high thermal noise level at room temperatures and are not particularly suitable for optical communications.

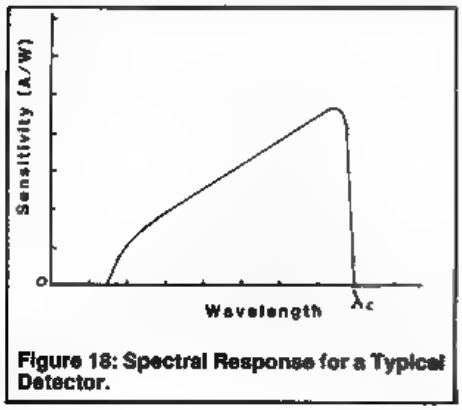


Figure 18: Spectral Response for a Typical Detector.

Unmodulated light falling on a detector will generate white noise from statistical fluctuations in the photon flux. The light noise is proportional to the square root of the detector current and is a function of the total light flux. Background light may be the main noise contribution in an atmospheric optical link operating during the day or on a moon lit night.

Receiver Optics

In a typical amateur photophone receiver, the light from the transmitter is concentrated on the sensitive area of the detector by a lens as illustrated in Figure 20 although mirrors become more convenient if a large collector is required. The lens or mirror should have a focal length longer than its diameter for efficient light collection. Magnifying glasses or magnifying sheets make suitable receiving lenses up to a diameter of 250 mm for visible or near infra-red signals.

The lens or mirror will form an image of the transmitter output aperture at the focal plane which for a lens of reasonable focal length will have a diameter of less than one millimetre. As this is smaller than the sensitive area of a practical detector all the transmitter light falling on the receiving lens will fall within the active area of the detector. The detector current will therefore be proportional to the area of the lens or mirror and independent of the focal length or the detector area.

A receiver will detect light arriving within a conical field of view whose angular diameter is defined by the focal length and detector diameter. This field of view may include unmodulated light from scattered sunlight or moonlight as well as modulated light from street lighting and other sources. The unmodulated light will generate white noise in the detector while street lights and house lights will produce a strong 100 Hz interference.

As the noise and interference produced by the background light will increase with the receiver beamwidth the receiver's field of view should be reasonably narrow. However, a very narrow field of view will make the receiver difficult to align and may require some form of optical tracking system to compensate for changes in atmospheric refraction.

A detector about two millimetres in diameter will give a beamwidth between three and 10 milliradians (0.2°-0.6°) with typical receiver lenses which appears to be a reasonable compromise between interference suppression and ease of aiming. Larger detectors should have their effective diameter reduced with a focal plane aperture plate.

To be continued next month . . .

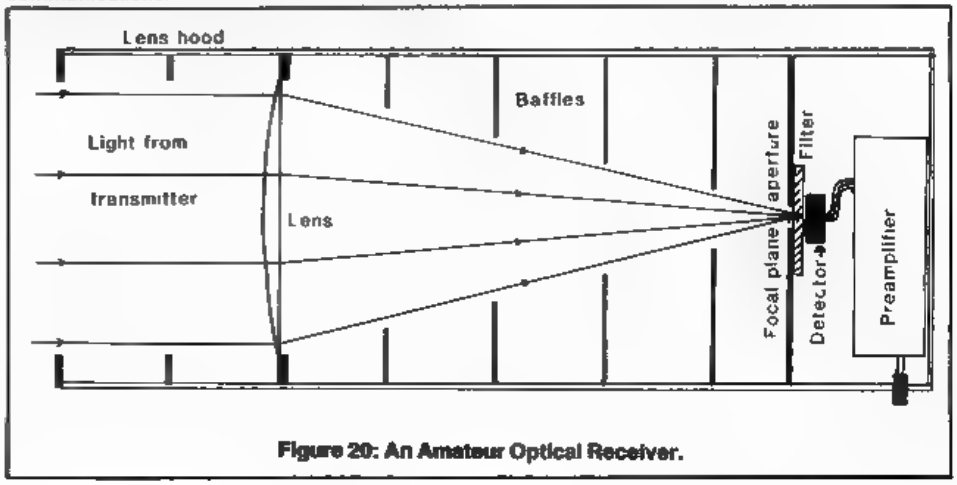


Figure 20: An Amateur Optical Receiver.

SCANCONVERTOR

This scanconvertor was developed as a companion to a receive-only scan-converter. It allows operators who have a dedicated receive unit or a computer interface to store a picture from a video camera and transmit it at a slow scan rate independent of their receive memory. It uses readily obtainable parts, and this model was built from new parts for around $100.

Leon Williams VK2DOB
14 Powell Street, Bungendore, NSW. 2621

CONCEPT

To store a picture from a camera, the analogue signal must be digitised and stored in memory.

This scanconvertor samples a portion of 128 lines which is every second line in a block of 256 lines.

Each portion is converted into 128 pixels where each pixel's voltage level is represented by a binary value between 0000 for black and 1111 for white. Once the conversion has taken place the data is written into RAM. From here it is read at a slower rate and converted from the digital value to a frequency ranging between 1500 Hz for black and 2300 Hz for white. It is combined with 1200 Hz synchronised pulses to enable correct reception at the distant end.

SPECIFICATIONS

Input:	1V P-P (nominal) 70 Ohms negative synchronisation.
Conversion time:	1 frame (20 MS)
Controls:	Front — brightness and contrast (allows for wide variations in input signal). Front— snatch switch. Rear — Power switch.
Format:	128 pixels x 128 lines.
Shades:	16 (including black and white).
Slow Scan Line Period:	60 MS = 55 MS (can be varied) + 5 MS horizontal synchronised signal.
Slow Scan Frame Period:	7.73 S = 128 x line period + 50 MS vertical synchronised signal.
White Frequency:	2300 Hz.
Black Frequency:	1500 Hz.
Horizontal Sync:	1200 Hz 5 MS.
Vertical Sync:	1200 Hz 50 MS.

ANALOGUE TO DIGITAL CONVERTER BOARD

Q1 amplifies the video signal and is coupled to the contrast control and synchronous separator.

The synchronous separator accepts the now inverted signal and, because of Q4's biasing, conducts only on the synchronised tips.

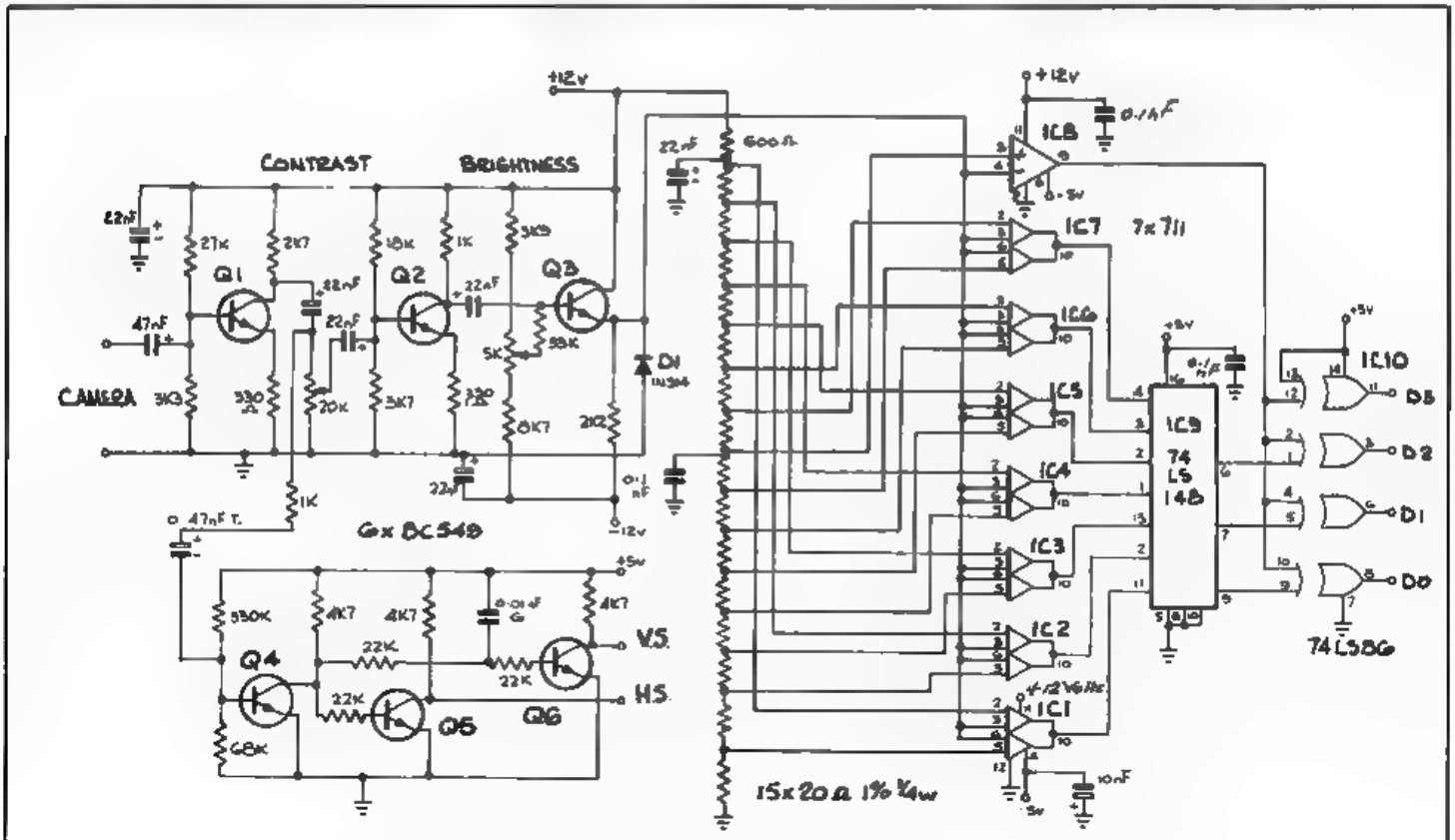
The separated synchronous pulses are buffered for horizontal synchronisation and integrated before buffering to give vertical synchronisation.

The recovered synchronised pulses are positive going.

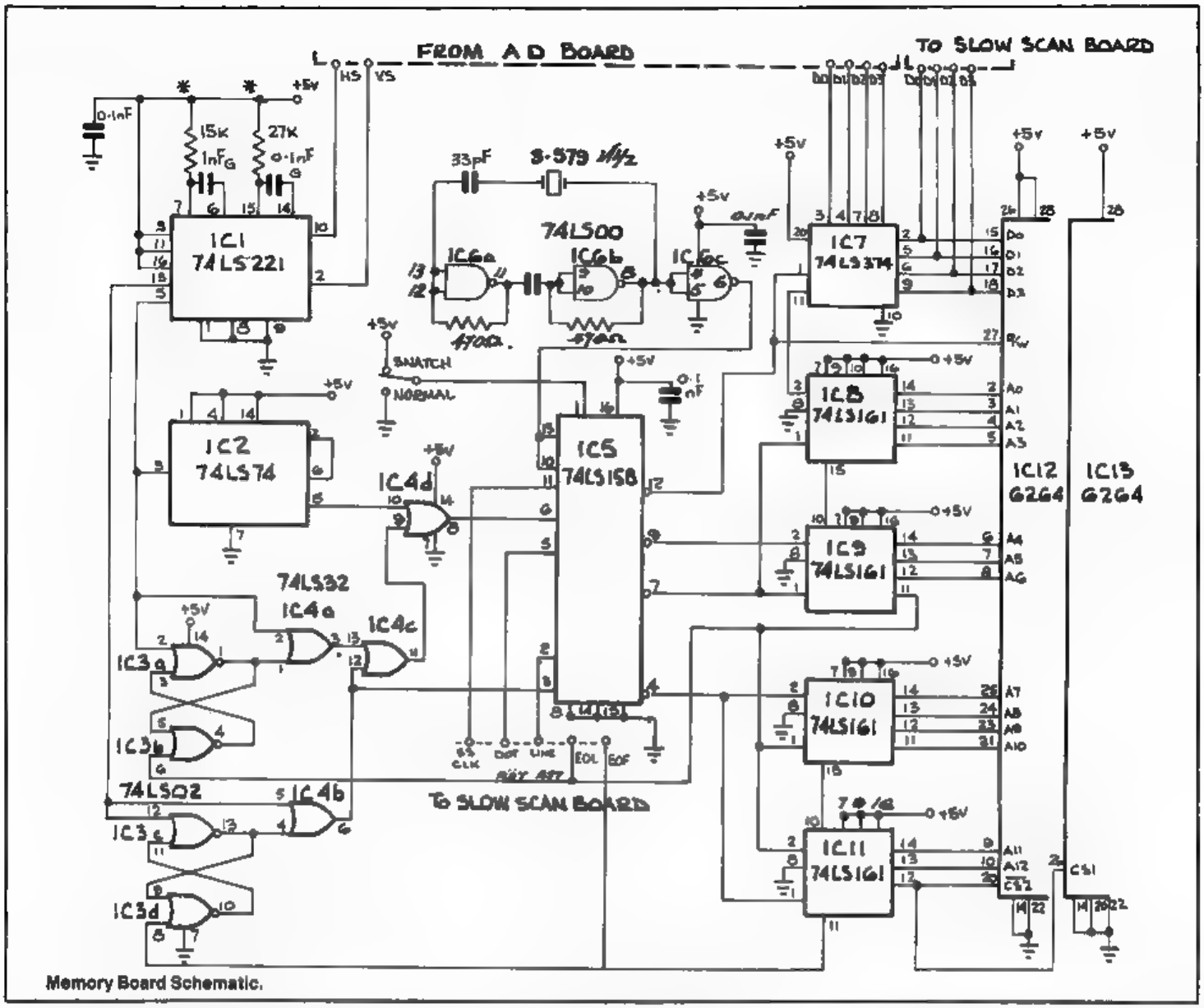
After the contrast control the signal is further amplified by Q2, another common emitter circuit and, at its collector, the signal is in phase with the camera signal.

This is followed by an emitter follower and has variable biasing provided by the brightness control.

Q3 provides a low output impedance signal where correct setting of the contrast and brightness controls give a black level of 0 volts and a white level of 4 volts.



Analogue to Digital Board Schematic.



Memory Board Schematic.

The synchronised tips are below 0 volts and diode D1 clips the signal below 0.6 volts. The analogue to digital converter employs discrete comparators which are inexpensive and easy to obtain.

While they perform adequately, they are noisy and complicate board layout. They are, however, still much less expensive than single chip video flash converters.

A ladder of one percent resistors form 16 discrete voltage levels between 0 volts and 4 volts. The video signal is compared with these levels by eight high speed comparators. Their outputs are encoded by a priority encoder and an exclusive IC.

With an input of 0 volts all comparator outputs are high resulting in all data outputs being low.

As the input level increases, the lowest comparators output (IC1) goes low, then the second and so on. When the output of IC7 goes low, D0, D1 and D2 outputs are all high and if the input increases further the output of IC8 goes low. This causes D3 to go high and D0, D1 and D2 to go low.

As the input increases further, the output of IC7 goes high, then IC6 and so on, causing the encoder to decrement.

Because its outputs are now inverted, D0, D1 and D2 begin to increment, and when the input is at 4 volts, D0, D1, D2 and D3 are high.

MEMORY BOARD

Circuit Description

This board contains the memory ICs, IC12 and IC13. Each chip contains half the picture. It is possible to store one whole picture in only one IC, thus saving one IC, but this requires extra circuitry to store two pixels in one memory location, and was not thought to be worth the effort. Anyway, one extra memory IC does not add greatly to the overall cost.

IC8 and IC9 are the dot (or pixel) address counters, while IC10 and IC11 are the line address counters. IC7 is a tri-state latch which latches the data from the Analogue/Digital board on the positive transition of the clock signal, and writes data into the memory when the clock is low. IC5 is a quad two input selector, that selects fast scan clock and counter resets when pin one is high. When pin one is low, IC5 selects the slow scan clock and counter resets. When in the slow scan mode IC7 is disabled and the memory is held permanently in read.

IC6 is the fast scan clock oscillator, the frequency selected results in a near 1:1 aspect picture.

IC1 is a dual monostable. One half triggered from the separated horizontal synchronised pulse and produces a delay at pin five to delay the start of the picture horizontally.

The other half produces a delay at pin 13 triggered by the vertical synchronised pulse to delay the start of the picture vertically.

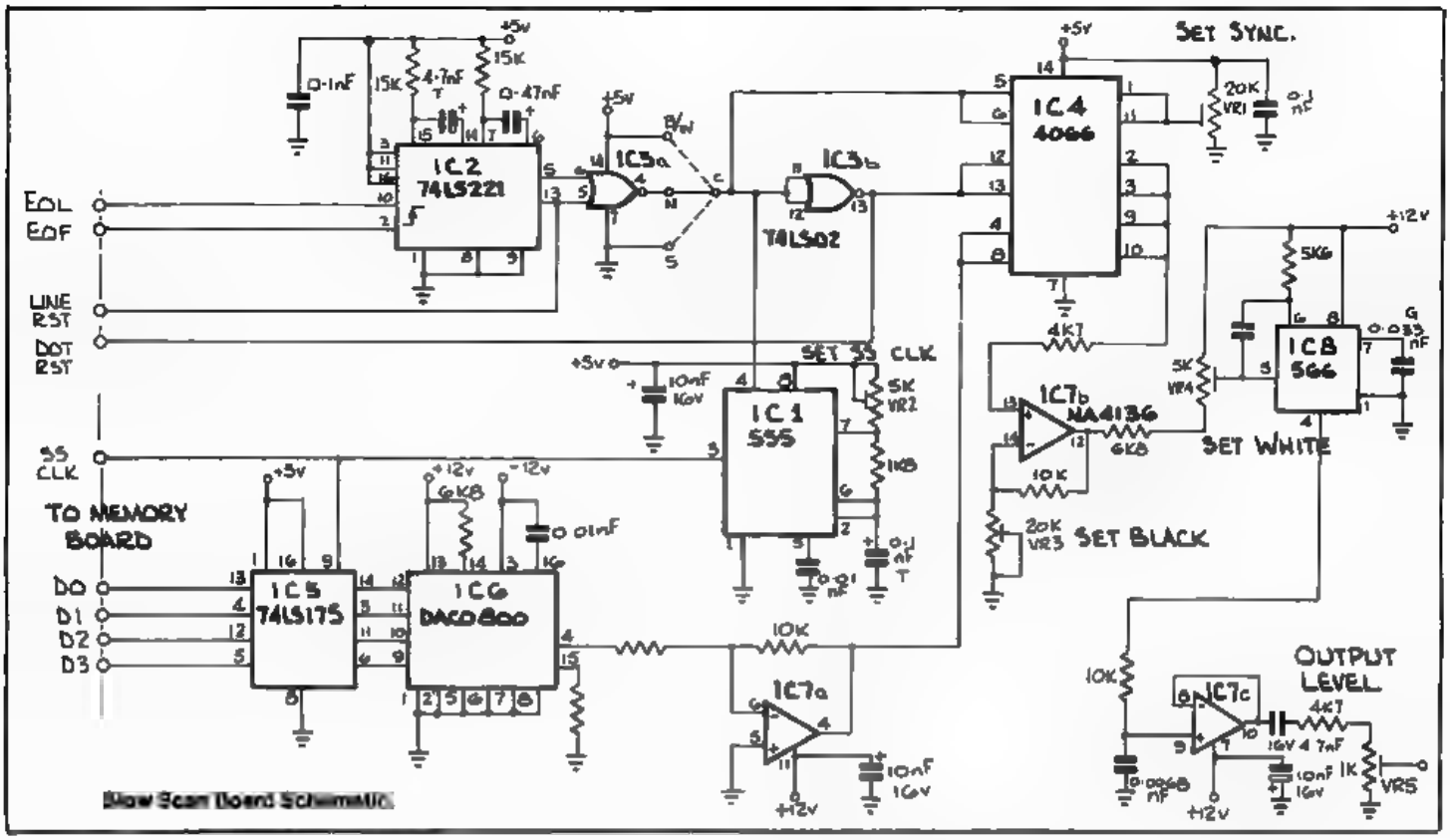
IC2 is connected as a divide by two, which allows only every second line to be stored. The delay pulse from IC1 and pin five resets IC3A and IC3B, causing IC3A pin one to go low. However, IC4A pin three is still high due to the high delay pulse. This high is passed through IC4C, IC4D and IC5 to reset IC8 and IC9.

Once the delay has ended, IC8 and IC9 are clocked by the fast scan clock.

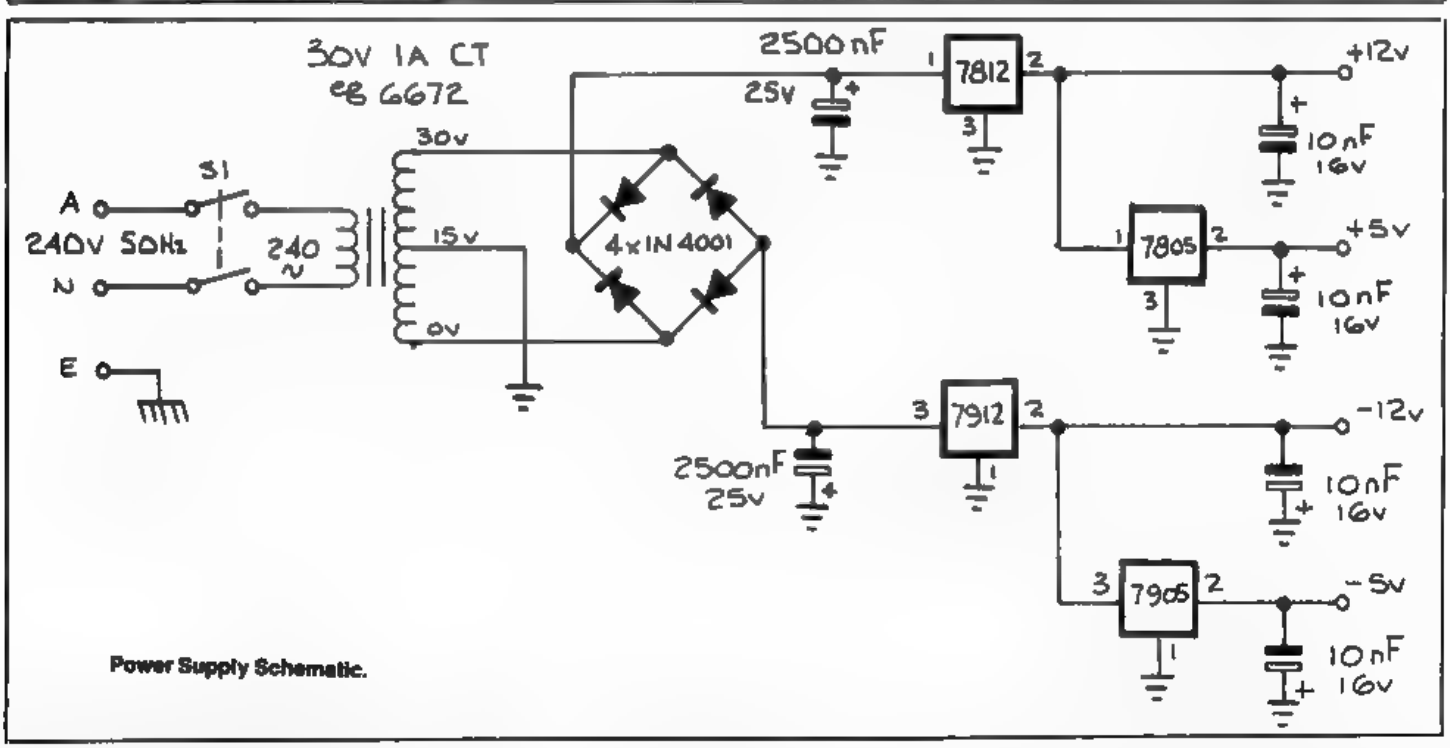
After 128 locations have been addressed, IC9 pin 11 goes high and clocks the line counters. It also sets IC3A and IC3B, causing the dot counters to reset. They stay reset until another horizontal delay has finished. This process repeats until 126 lines have been addressed, where IC11, pin 11 goes high. This resets all counters, until the vertical synchronised delay has elapsed. This process repeats itself as long as the snatch button is pressed.

ADJUSTMENTS

The only adjustment needed on this board is to



Slow Scan Board Schematic.



Power Supply Schematic.

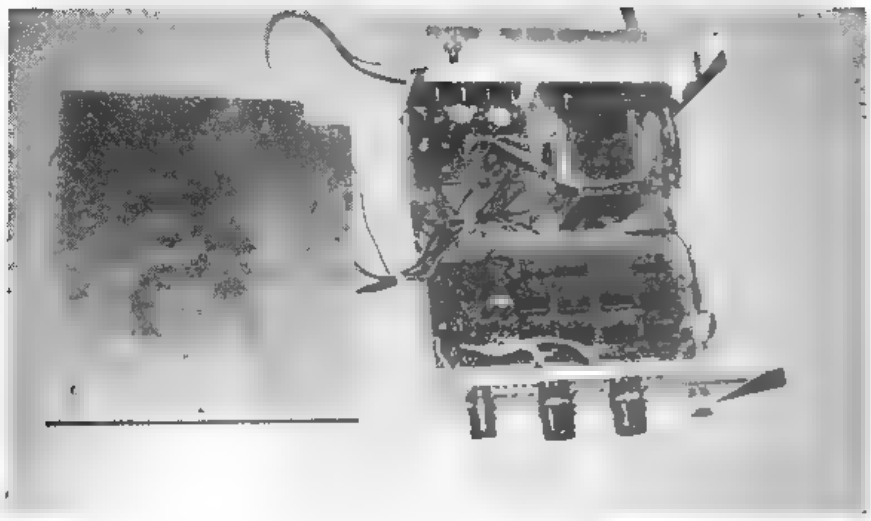
the resistors connected to IC1. This will need to be done once the scanconvertor is built, and the output displayed on a receive scan-converter. With the camera pointed at a subject and a picture snatched, it can be seen on the receive converter, If the captured picture is centred in respect to the picture from the camera displayed on a fast scan monitor. Decreasing the resistor values will shorten the delays and move the picture closer to the top and left. Increasing the values will have the opposite effect.

SLOW SCAN BOARD

Circuit Description

IC2 is a dual monostable. One half is triggered at the end of line, producing a 5 MS pulse at pin 13 (horizontal synchronisation). The other half is triggered at the end of frame, producing a 50 MS pulse at pin five (vertical synchronisation). The horizontal synchronised pulse resets the dot counter, while the vertical synchronised pulse resets both dot and line counters. As well, both synchronised pulses are zeroed by IC3 to reset the 555 clock and selects the synchronised trimpot via the 4066 IC4.

IC5 latches the data from memory on the positive transition of the clock, while the address counters are incremented on the negative transition IC5 provides inverted data to IC6, a digital to analogue converter. Only four of the eight data lines are used and, along with IC7A, produces an output at IC7A pin four of 0 volts for white and about 1 1 volts for black. This analogue voltage is passed through IC4



A divider separates top and bottom.

when a synchronised pulse is not active. IC7B and trimpots VR3 and VR4 provide level shifting of the signal for correct control of the VCO (IC9).

The output of IC8 at pin four is a triangular wave and is filtered before being buffered by IC7C.

Alignment

Connect all the power supply lines, and set all trimpots to halfway. Solder a common wire to the data inputs and connect it to +5 volts. Solder a wire between pins marked B/W and C. Using a frequency counter, adjust VR2 for a clock frequency of 2327 Hz at IC1 pin three. Connect the counter to the output of IC7C, and adjust VR4 for a reading of 2300 Hz.

Next, connect the common wire soldered to the data lines to 0 volts. Adjust VR3 until the counter reads 1500 Hz. Some interaction may occur, so check each reading until you have them right. Now, remove the wire between C and B/W and connect it between C and S. Adjust VR1 for a counter reading of 1200 Hz. Once this is done, remove the wire and solder it between N and C. The output level may be adjusted by VR5. The board is now fully aligned and ready for connection to the memory board.

POWER SUPPLY BOARD

Circuit Description

The power supply follows conventional lines.

The 30 volt, one amp, centre tap transformer supplies about 20 volts to the 12 volt regulators. The five volt regulators are fed from the 12 volt outputs to reduce heat dissipation in the five volt devices.

Construction

The scanconvertor is housed in a home-brew case bent from 0.8 mm aluminium sheet, measuring 180 mm wide, 100 mm high and 200 mm deep. It is made of three pieces — a U-shaped section forming the base, a U-shaped section for the cover and a flat piece that forms a divider between top and bottom.

The divider is held in place by aluminium angle screwed to the inside, front and back. The power supply and the Analogue/Digital board are mounted in the bottom section

The transformer is mounted to the right rear, near the power switch and the voltage regulations are bolted to the left rear along with insulating washers.

The Scanconvertor is mounted in a home-brew case.

The front panel has the camera socket, brightness and contrast controls together with the snatch switch mounted below the level of the divider.

The divider has the memory and slow scan boards mounted on it. The RCA output socket is mounted at the rear

Capacitors marked on the circuits with a T should be tantalums, whilst capacitors marked G should be greencaps. Other polarised capacitors can be 16 volt electrolytics apart from those labelled otherwise. Non-polarised capacitors can be ceramic discs. The printed circuit boards were made using a resist pen and as a result, no photographic artwork was made. If, however, intending constructors require assistance, the author can provide a guide to the board layouts. He would also be pleased to hear from any reader's general comments or improvements to the circuits.

FCC FINES COMPANIES

THE FCC OFFICE in San Diego, CA, (Dennis Connor Territory), has notified two companies that they are apparently liable for civil fines of $2000 each for the unlawful marketing of long-range cordless telephones. The companies violated FCC regulations which require that cordless telephones be certified by the FCC before sale. This particular could not be certified due to its design. The advertised range of the device was 60 km and certified cordless telephones generally have a range of less than 200 metres.

—From *The ARRL Letter* January 13, 1987

AGFA Maxi – A superior colour film with 3 bonus shots!

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A high quality film available at a bargain price — AND after you've taken the first 24 shots, you'll find 3 more!

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ET CHIP

IF THERE ARE ANY extra-terrestrials beaming radio signals to earth, NASA will have a better chance of detecting them thanks to a computer chip designed by Stanford University graduate students.

It will be used in the Search for Extra-Terrestrial Intelligence (SETI) program, which is trying to identify radio signals amid natural noises from gaseous clouds, cosmic debris and stars.

The new chip is a 40 to 1 improvements over current technology, and will be put in a system that reads information from an antenna in the Mojave Desert.

It was developed to increase the number of radio channels received by the antenna.

Each chip contains 34 000 transistors and can perform 80 million arithmetic operations per second.

The SETI program is focusing on an area of about 1000 stars, listening to them through the microwave portion of the radio spectrum for any sign of intelligence.

50 cm ATV ALLOCATION

THERE WAS A brief paragraph in the December issue of AR (page 15, *Special Condition*) which indicates that frequency assignments in the 576-585 MHz band (frequently used as an ATV repeater downlink) are under review. Also, new licences for repeaters in this band are being endorsed to this effect.

An article appeared in the October 1985 issue of *Amateur Radio* (page 5, *UHF ATV — 50 cm*) which gives the background and details of an agreement between the WIA and DOC on this matter. The important points of that agreement are that the DOC Broadcasting Services Division accepted the principle of amateur television in the 50 cm band, but that alternative channel allocations may be necessary in specific geographic areas.

—Contributed by Peter Gamble VK3YRP, Chairman of FTAC

POWER SUPPLY TRANSFORMERS

Geoff Switzer VK2SR
53 Turf Street, Grafton, NSW, 2460

Regulators, pass transistors, ex-computer capacitors and bridge rectifiers can be had at bargain prices.

Building up 13.8 volt power supplies has become a common past-time for the current amateur fraternity. Regulators, pass transistors, ex-computer capacitors and bridge rectifiers can be had at bargain prices. But what of the heavy duty transformers? New ones cost an arm and a leg and become the major proportion of cost of any prospective power supply.

Setting up the shack these days is a daunting prospect for the new amateur and the cost of a commercial power supply, added to the cost of the basic rig, borders on the prohibitive. So let us go back to the days when the amateur was resourceful and use some of the initiative that was the pride of many old timers.

Power transformers ex black and white televisions are still about for the taking but never seem to turn up as the ideal single transformer for the heavy duty supply. But for those of us prepared to wrestle with a stack of laminations and have the patience to lay on a few turns of wire there is a ready and economical solution.

The answer is to use two, three or even four transformers connected with the primaries in parallel and the secondaries in series. Indeed, three identical transformers, each with heavy 6.3 volt windings in series can provide about 19 volts — ideal for connection to the bridge.

For a rewind job the following general procedure should be followed:

1. Select a gauge of wire suitable to the current expected from the supply.
2. Make a calculated guess at the wattage or VA of each of the transformers available for the project. Refer to Paragraph 7.
3. Connect each transformer to the 240 volt mains and measure the voltage of the heavy winding, say 6.3 volts.
4. Dismantle each transformer, then remove the measured winding, counting the number of turns. Later this count is used to determine the turns per volt.
5. Remove the high voltage secondary — a hacksaw is a useful expedient. Be careful not to damage the primary winding, invariably the one immediately on the core.
6. Add a couple of layers of appropriate insulation to that already covering the primary winding.
7. Wind on the new heavy gauge secondary to as many turns as calculated from the turns per volt and VA capacity of the core to realise the desired output voltage. Tape over the finished winding. Remember that the core laminations must be replaced with clearance to the finished winding.
8. Connect each transformer to the mains supply and measure the output voltage of each secondary.
9. Connect secondaries in series.
10. Connect primaries in parallel to the supply, transposing the connections as necessary to produce the total required voltage of the series secondaries.

The use of this system assumes that the constructor will observe the regular practices conforming to mains connected devices. Give particular attention to making an earthing connection to the transformer cores and electrostatic shields. The bracket of transformers may be mounted on a separate assembly to the rest of the power supply. Ventilation is imperative.

The wire gauges used can be calculated from the *ARRL Handbook* or ascertained from the friendly supplier of your requirements.

If you have been sufficiently interested to read this article I have one final word of recommendation. Never pass up a transformer of any type or dimensions. Soon they will be history and consequently very expensive. There are no transformers to be found in modern televisions and it seems that the 'live chassis' principle is back with a vengeance . . . and probably forever.

Try This!

Paul Jenner ZL1TZA
Box 241, Mata Mata, NZ

NOISE BLANKERS

Following is a circuit for a Noise Pulse Generator, usable for two metre frequencies, at least.

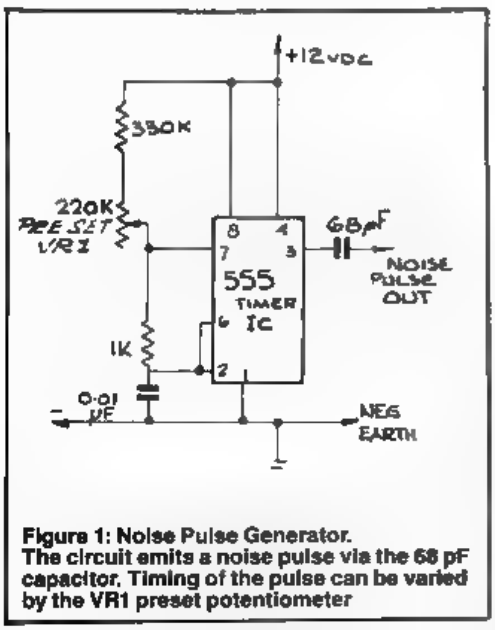


Figure 1: Noise Pulse Generator. The circuit emits a noise pulse via the 68 pF capacitor. Timing of the pulse can be varied by the VR1 preset potentiometer

The Noise Pulse Generator has helped repair the intermittent or defective noise blanker in my TR9000 rig, also in my TS670. The TS670 noise blanker has never worked since new. The agent however, said it was alright.

I constructed the following circuit on some veroboard as shown in Figure 1.

My TR9000 was intermittent in the noise blanker circuitry — the noise blanker was not always working! The covers of the rig were removed and the noise pulse was injected into the aerial socket or any other convenient point. Checking the boards by tapping components I found a bypass capacitor in the noise blanker circuitry was intermittent. This capacitor was replaced and everything then worked well.

Incidentally, the noise blanker was turned on for the testing.

This method of operation is far quieter to use than the electric drill method as outlined in AR, page 38, November 1986.

The TS670 noise blanker, which was useless since new, had this noise pulse generator fed into the TP1 or the RF board, with the noise blanker switched on. All components in the noise blanker circuitry checked okay, incidentally, and they were thoroughly tested.

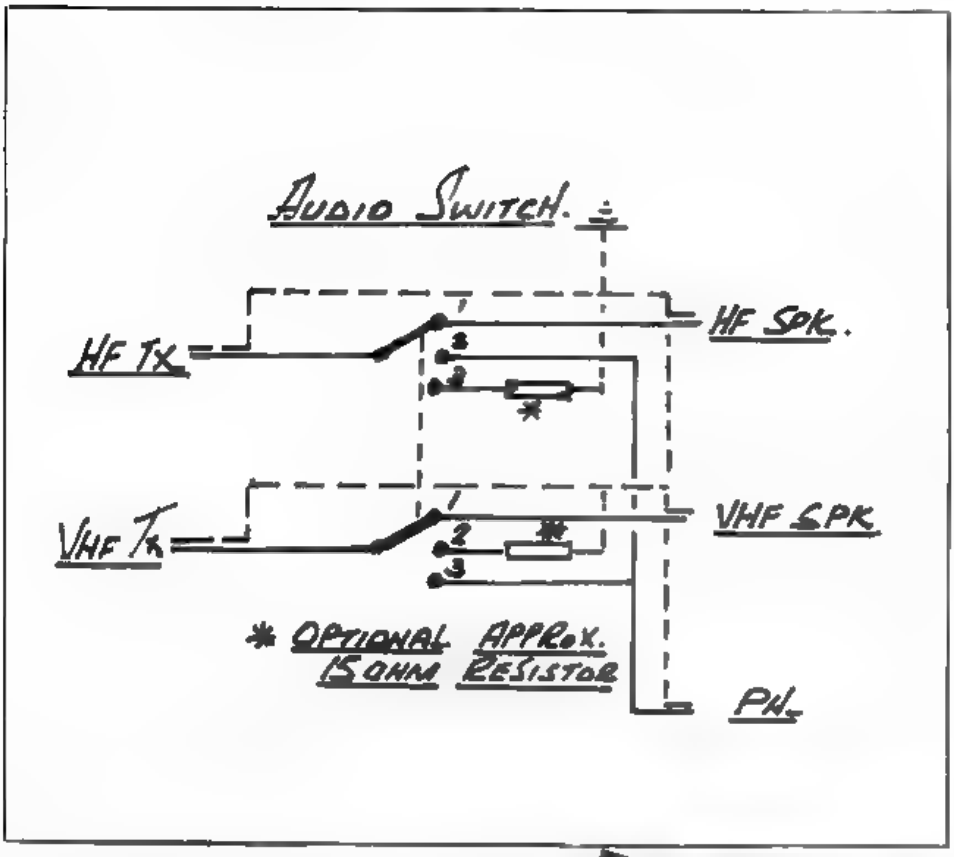
Next the noise blanker IF was checked for alignment, adjusting T26 and T27 for maximum rejection of noise. In my case, the S meter deflection due to noise fell from S9 to less than S1 after alignment.

Hopefully, this information and circuit may be useful to anyone checking noise blanker circuitry.

Try This!

GADGETRY

George Cranby VK3GI
Box 22, Woodend, Vic. 3442.



A little gadget for amateurs who work HF and VHF (or even UHF) and live within a family environment.

I use HF and VHF equipment, both with external speakers. In order not to interfere with other members of the household, and also due to some slight deafness, I often prefer to use head phones. However, I always found it inconvenient to plug them in and out, and switching sets on and off, whenever I wanted to change from one rig to the other.

I have now installed a three-position switch, fitted into a very small A1- box (6 x 4 x 2 cm), together with a phone plug receptacle. The wiring is shown in Figure 1.

Position 1	Both speakers connected to their respective transceivers.
Position 2	Both speakers disconnected, phones switched to the HF rig
Position 3	Both speakers disconnected, phones switched to the VHF rig

A fourth position could be used for a UHF rig. The resistors shown are for the perfectionist who cannot bear the thought of an open- circuit secondary winding at the audio transformer.

I can now listen to whichever rig is used, either on its own speaker or on the headphones. I also can have both rigs ON and switch the headphones from one to the other, without disturbance to others. The headphones remain permanently plugged into the switch box now.

If no external speakers are in use, the system can still be installed but will involve breaking into the transceiver audio circuits.

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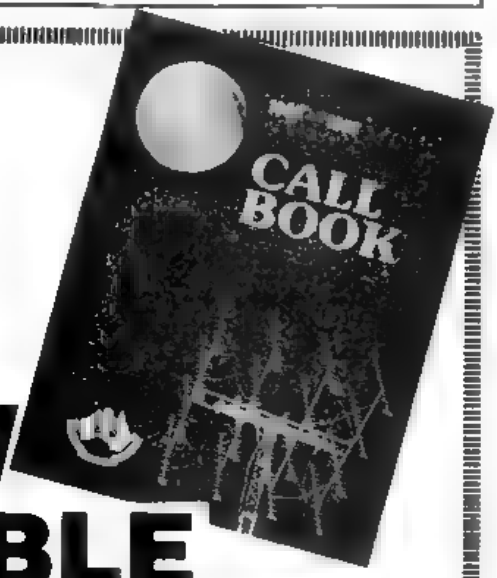


NOW AVAILABLE

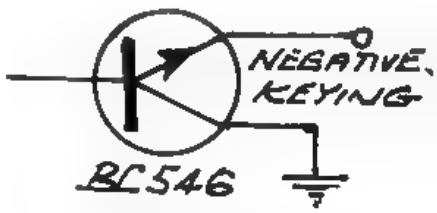
THE 1986-87 WIA CALL BOOK IS NOW AVAILABLE FROM DIVISIONAL OFFICES.

PRICE: $6.50 plus post and packing

CORRECTION

Unfortunately the schematic of the BC546 was incorrectly marked in the main circuit diagram of the Iambic Touch Keyer, AR, February 1987, page 6.

Please amend your copy.



GOLDEN JUBILEE DXCC AWARD

THE FIRST FOUR applicants for the DXCC Golden Jubilee Award were received at ARRL HQ on January 5, 1987. AA2Z and W6GO worked 100 countries in the first three days! As of January 9, a total of 18 applicants had been received.

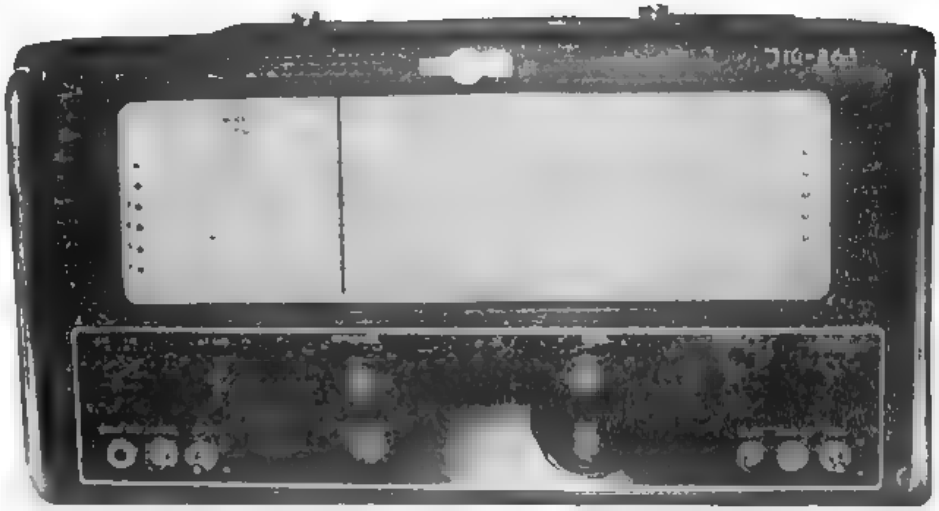
—From *The ARRL Letter* January 13, 1987

CLASSIC COMMUNICATIONS EQUIPMENT

Colin MacKinnon VK2DYM
52 Mills Road, Glenhaven, NSW 2154

The EDDYSTONE 770U UHF RECEIVER

This month's Classic Communications Equipment looks at the Eddystone 770U UHF receiver, the companion unit to the previously described 770R.



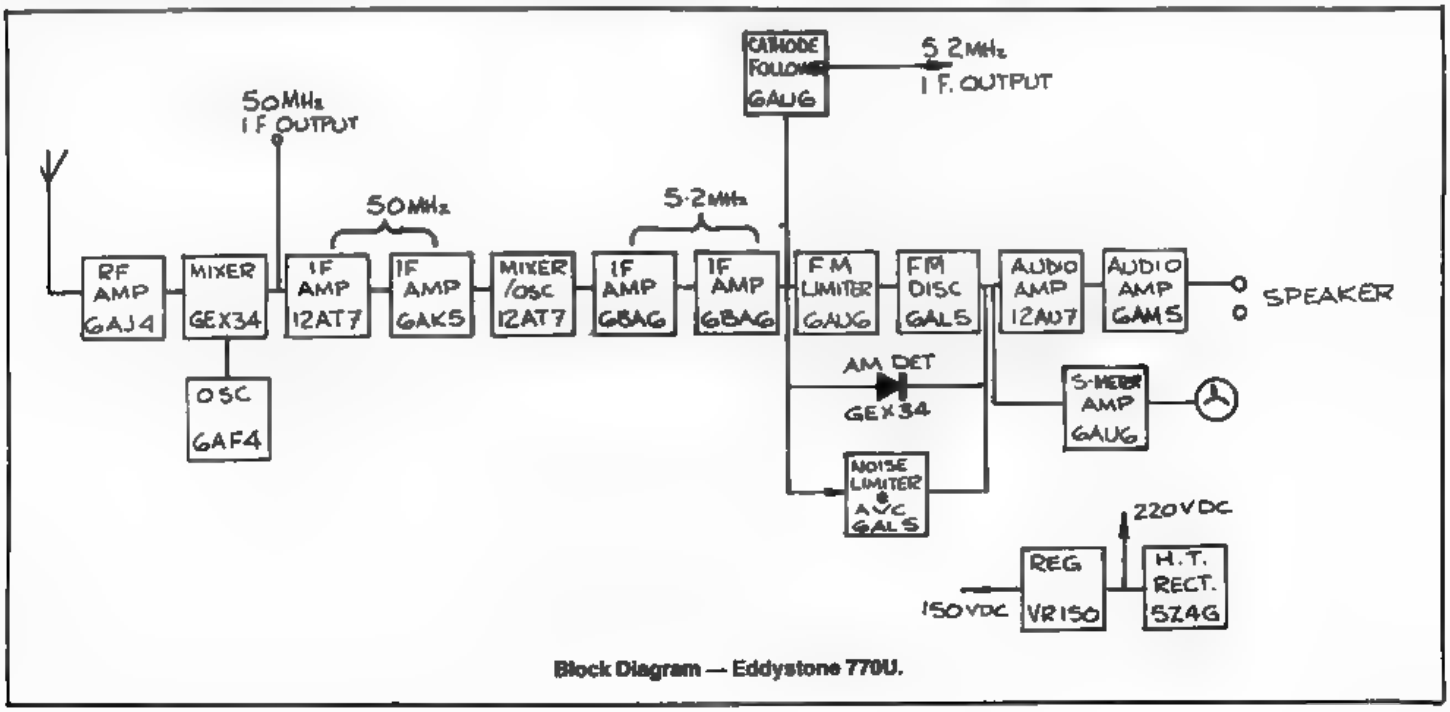
The 770U is a 16 valve, general coverage receiver also designed in 1953-54 and it gives continuous coverage from 150 MHz to 500 MHz in six bands. It receives only AM and narrow band FM. The same large Eddystone horizontal dial is employed with the reduction ratio of approximately 140:1. Like the others of the series the front panel is a die-casting attached to a solid steel chassis, and the sheet steel case slides on, but has a lift-up lid for minor access.

Internally the power supply is on the right (looking from the front), the RF and band-switching in the centre, and the IF and audio stages on the left side. To minimise variations to the input, the antenna socket is mounted inside the set, directly on the RF turret. Access to plug in an antenna is awkward.

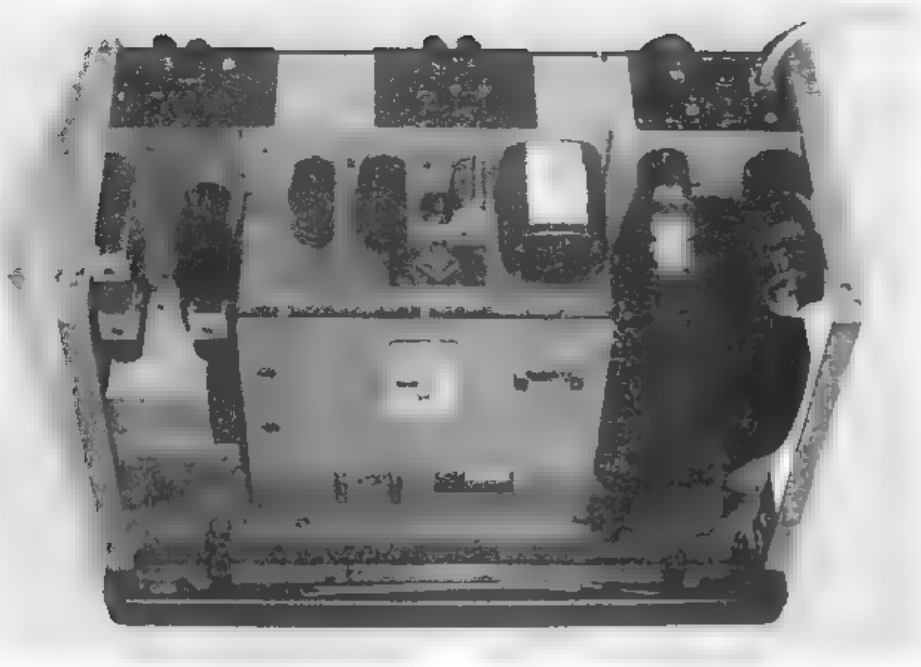
The block diagram shows the antenna input at 72 ohms, unbalanced, switched via a television type tuning turret for the six different bands to tuning coils and then to the RF amplifier, in this instance a 6AJ4. The tuning gang is three sections of only 2-8 pF. The RF amplifier, mixer and oscillator are all mounted right on the turret to minimise lead capacitance, etc. A germanium diode is the mixer and the oscillator is a 6AF4, operating at 50 MHz above the signal on bands three to six, and 50 MHz below on bands one and two. The resultant first IF is at 50 MHz and passes through a cascade amplifier to a 6AK5 IF amp. A 12AT7 acts as a mixer/oscillator to produce a second IF frequency of 5.2 MHz. After two stages of IF amplification, the signal is fed to the detectors. There is a limiter and discriminator for FM, whilst in the AM mode the signal goes to a germanium detector diode. A cathode follower allows the 5.2 MHz IF to be fed to a CRO or analyser, via a coaxial socket on the right-hand side of the front panel. As in the VHF version, additional valves provide noise limiting and AVC, and control the S-meter for signal strength or centre tuning for FM. The audio feeds a 12AU7 push-pull driver and is boosted to 0.5 watts to the 2.5 ohm speaker output by one-only 6AM5.

The power supply is almost identical to the 770R, comprising a tapped transformer allowing inputs between 110 and 250 volts and utilising a 5Z4G rectifier and a VR150/30 regulator.

The control layout on the front panel is very similar to the previously described set. The 0 to 100 vernier disc rotates 25 times from edge to edge of the dial, giving a scale length of 10.36 metres. The meter at the top- right functions as an S-meter on AM, and a centre tune meter on FM. Whereas the band-switch on the 770R was numbered one to six, this one is not — but instead there are small lights down the left edge of the tuning dial, the appropriate one lighting for each band.



Block Diagram — Eddystone 770U.



Top internal view of the 770U.

impedance headphone jack on the left side panel, which effectively prevents any other equipment being positioned alongside that end.

Below the tuning scale, on the left, there is a two-position mode switch for AM and FM. Below this switch is a jack into which can be plugged a lead to a "limiter grid current" meter, (useful for alignment and measuring strength of FM signals). Next there is an AF gain control with an AVC On/Off switch below it. Between the jack and AVC switch is a BNC socket to permit a signal at 50 MHz and 75 ohm impedance to be directly fed to the first IF chain; eg a special converter for other frequencies with the output at 50 MHz could be added.

Next is the six position band switch, rotating a turret and arranged so that it is locked in position when the contacts are correctly aligned. The flywheel tuning knob rotates the vernier disc and moves the dial pointer across the dial. There is a 0 to 2500 logging scale at the bottom of the dial which is used in conjunction with the vernier disc.

At the right end of the front panel there is a noise limiter On/Off switch (only effective on AM), then an IF gain control. Below these are a socket for the 5.2 MHz IF output via the cathode follower, a standby switch and lastly the mains On/Off switch. The standby switch desensitises the set but leaves the oscillators operative to avoid drift.

For some unfathomable reason there is a high

The rear panel has, from the left, two fuses in the mains input lines, then a plug to allow battery operation (using "A" and "B" batteries); terminals for a 600 ohm output with a centre tap if desired. Below these are terminals for the 2.5 ohm speaker output, and over on the right are terminals for a pick-up input direct into the audio amplifier.

Technical specifications of the 770U are as

FREQUENCY RANGE:

Band 1	400 to 500 MHz
Band 2	330 to 400 MHz
Band 3	270 to 330 MHz
Band 4	220 to 270 MHz
Band 5	180 to 220 MHz
Band 6	150 to 220 MHz

INTERMEDIATE FREQUENCY
First IF 52 MHz
Second IF 5.2 MHz

SENSITIVITY: better than ten microvolts for 15 dB S/N ratio and 50 milliwatts output on all ranges.

SELECTIVITY AM and FM
3 dB down — 15 kHz off resonance
6 dB down — 20 kHz off resonance
20 dB down — 50 kHz off resonance
40 dB down — 100 kHz off resonance

FM DEVIATION
Narrow — 15 kHz

DIAL CALIBRATION: within 0.2 percent on all bands.

DIMENSIONS: approximately 432 by 229 by 356 mm (WHD).

WEIGHT: 25.4 kilograms (56 pounds) — the size and weight match the 770R!

For quite some time the 770U was the only reasonably available, full tunable UHF receiver on the market. It performs well and is easy to operate although it has not many controls to worry about anyway. I would guess that it's main market was to commercial broadcasters and communication monitors, where it would be useful for casual monitoring over it's very wide frequency ranges.

Both the 770R and 770U are prone to intermittent faults in the turret head if any of the small and fragile contacts fail to touch the contact fingers or if they have dirt, etc on them.

As an overall summation of the 770R and 770U, the mechanical execution is good but the electronic features are unexciting. It should be remembered though, that in 1954 they were state-of-the-art — in the UK anyway.

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Thumbnail Sketches

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101

MERVYN J WRATTEN VK4MW
AOCP Ipswich, 1937

Cricket fever and 'bodyline bowling' were responsible for Merv's lifelong interest in wireless; a crystal set was built so that he could obtain the 'instant' score. That is where it all began and Merv is still active, with his original call sign, a half-century later.

A close friend in those days was Ramsay Bruce VK4AB (SK) and they received code instruction from Leon Woolley VK4FW (SK). Together they sat for the AOCP and were told to bring their own code oscillator. Ramsay was tested first at 14 WPM and Merv attempted to eavesdrop outside the door, knowing he'd get the same text. He was caught. To do his written examination paper, Merv sat behind the main Ipswich Post Office front counter. As he knew many of the locals, he was continually asked, "What are you doing there?" Despite the interruptions he passed at the first attempt.

Like many of his pre-war contemporaries, home-brewing was the big thing and Merv turned out some precision gear. Post-war, he built an exact replica of the *Swan 400* transceiver and used it for many years.

Outside amateur radio, VK4MW's life has been varied indeed. He began work as Manager of the Electrical and Radio Section at Cribb and Foote Emporium, then moved to Tillers Vacuum Cleaners (industrial). In 1963, Merv entered the Ipswich Railway Workshops as a fitter and turner on steam locomotives and retired 15 years later, in 1978. He was also part owner of the Avon Picture Theatre, and now remains active running a printing business. His spare time interests are photography, world travel and a continued association with *Hunting Lions of the Air* — the amateur radio Chapter of Lions International.

VK4MW is a long term member of the WIA and Ipswich Radio Club, also Pacific DX Net member No 343 and 10-10 International member No 14829. He has worked plenty of rare DX down through the years, but still admits to a sentimental interest in crystal sets.

ar

Janice Wooler VK4VFY/MM, N2GQN/AA/MM, KD2XT/MM
28 Jamieson Street, Bulimba, Qld. 4171

AMATEUR RADIO RESPONSIBLE FOR RECOVERING STOLEN YACHT

Whilst on a voyage on board our yacht *Yawarra* between Fiji and Tuvalu, (formerly the Ellice Islands) at the end of October 1986, I was reporting our position and weather conditions daily to *Tony's Net*, a popular Maritime Mobile Net in the SW Pacific (14.315 MHz, 2100 UTC daily). On October 26, John P29JM, from Bougainville, asked all vessels on the net to watch for a yacht which had been stolen from its mooring at Kieta two days previously. The information given at the time was that the vessel was a 30 foot fibreglass yacht, cream with four red horizontal stripes including a red gunnel stripe and named *High Noon*. The name was in large lettering on both sides with the Os painted to look like eyes. It had a fractional rig, outhung rudder, centre-board, sail number of 1589, red and yellow spinnaker and an outboard motor.

The owners name and telephone number were given with a request to call him, reverse charges, with any information about the vessel.

For each of the following days this information was repeated on the net with additional information being given that the man believed responsible for the theft was wanted by *Interpol* for similar crimes. Also, the registration papers for the yacht *Colomba* had been stolen from Kieta at approximately the same time. As *Colomba* was about the same size as *High Noon* it was believed that a name change may have taken place on the stolen yacht. Authorities in the countries around the Pacific were also notified.

Having had our own yacht burgled in Fiji only a few weeks before, my husband, Nick, and I felt very sympathetic for *High Noon*'s owner. Several times we discussed the theft and the likely whereabouts of the yacht. We both felt Tuvalu and Kiribati (formerly the Gilbert Islands) were likely destinations as they were both small, out-of-the-way countries with very little yacht traffic.

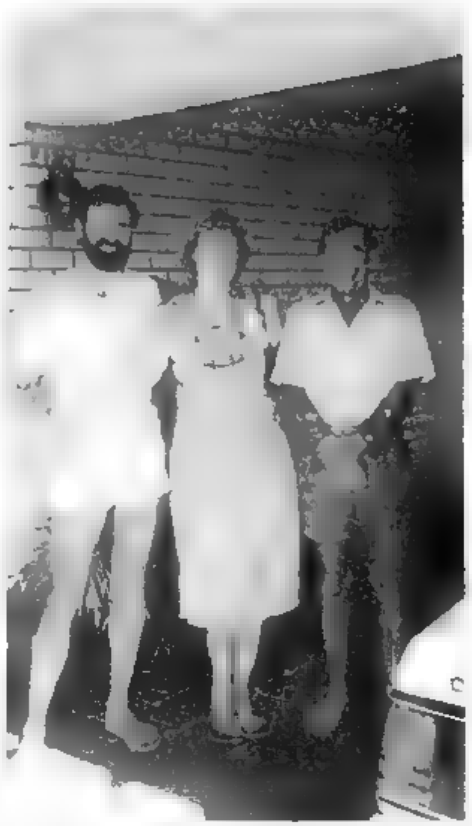
Because of this, we discussed the theft with the Chief of Customs in Funafuti, Tuvalu, and gave him the details when we checked in a few days later.

Even so, we were still caught by surprise when, a month later, in Kiribati, we recognised the new yacht that had arrived three days earlier (while we were anchored at a small island several miles away), as the *High Noon*. The name had indeed been removed from the sides but otherwise the paintwork was unchanged. The name *Colomba* was roughly applied with tape in small lettering on the bow.

Fortunately, *Tony's Net* was in progress at the time we made our discovery. I contacted Terry ZL1MA, Net Control, and asked him to check the *High Noon*'s information, which I then copied down to take to Customs and Police. We were now 99 percent sure that it was indeed the stolen yacht.

We then spent a frustrating one and a half hours trying to convince the authorities (who had no record of the theft). Finally we spoke with the Police Commissioner, a Scotsman, who rapidly confirmed our story with the PNG authorities. A man was arrested and the vessel placed under police guard that afternoon. (He has since been tried and found guilty of stealing the yacht).

The owner of *High Noon* was notified that it had been found and was able to liaise through John P29JM, to obtain details from me as to the condition of his vessel, etc and we were able to meet him at the airport when he flew into Tarawa eight days later.



From left: Nick, Jan VK4VFY and Tom VK4OD.

If it had not been for the amateur radio network, the vessel would never have been found as the only other yacht in Kiribati at the time did not have amateur radio equipment and had not heard of the theft. The robber had already surmounted his greatest hurdle before we discovered him as he had been given Customs and Immigration clearance into Kiribati, using false registration papers and a forged port clearance paper (from Costa Rica).

We also discovered he had arranged for *High Noon* to be slipped on the small marine railway in Tarawa and had been inquiring about paint. Large stencils for the name *Colomba* were found on board *High Noon*. It appears that in another week *High Noon* would have had a colour change and the new name and home-port applied in a professional manner. He would have then only needed to spend a few more weeks in one of Kiribati's outer lagoons for the "heat" to have died down and have completely committed the perfect crime.

High Noon's owner, Ian Worth, was so impressed by his contact with amateur radio — not only the recovery of his boat — but also with communication between Tarawa and Kieta, before he arrived in Kiribati and afterwards with his wife, that he has already obtained the books and tapes so that he can start studying for his license!

ABOUT THE AUTHOR:
Jan and her OM, Nick, crossed the Tasman in mid-1984. During the voyage they were in touch with amateurs Harry VK4VKS, Geoff VK4VLI, Horace ZL3WE, and Tom VK4OD ex VK4NUN.
Jan and Nick have been cruising the Pacific ever since.
Jan, VK4 Very Fine Yachtie received her American call sign, N2 Great Queensland Navigator in late 1986, and her full call from January 26, 1987 is KD2XT (no special phonetics have be thought of for this call sign yet!). In February 1987, Nick and Jan were in Ponape, East Caroline Islands en route to Japan.

—Contributed by Tom Dowling VK4OD

TOWNSVILLE
AMATEUR RADIO CLUB

Advance notice is given that the **Townsville Amateur Radio Club** will be holding the

8TH BIENNIAL NORTH

QUEENSLAND CONVENTION

over the weekend of Friday, September 4 to Sunday, September 6, 1987.

The venue is the beautiful Western Campus of the James Cook University.

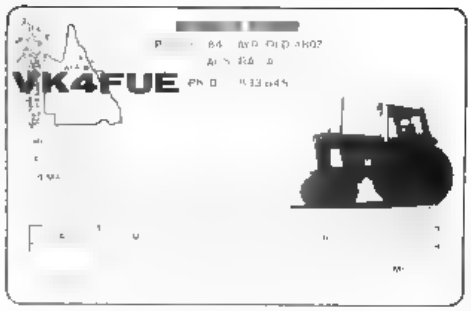
On-site accommodation will be available.

Further details from

The Convention Secretary
TARC
PO Box 964
Townsville, Qld. 4810
or telephone Bob Mann VK4WJ on (077) 81 4450 (BH), (077) 79 7869 (AH)

TRACTOR MOBILE

Robert Pavan VK4FUE
PO Box 843, Ayr, Qld. 4807



Why not combine work with some pleasure?

For most of September, October and November, the majority of my time at work is spent on a tractor. My job, along with two other chaps, is to grow sugar cane — 20 000 to 24 000 tonnes per year. Contractors do the harvesting and planting whilst my job involves ground preparation, irrigation, weed control (both mechanical), with herbicides and the application of fertilizer.

The tractor is an *International 1086*, 135 horsepower turbo with air-conditioned cab — quite a comfortable unit but the hours spent can become very boring. Approximately 600 hours during the season, June to Christmas, are spent on the tractor, hence the thought; why not combine work with some pleasure? So the two metre rig was installed, with a quarter-wave antenna on top of the cab.

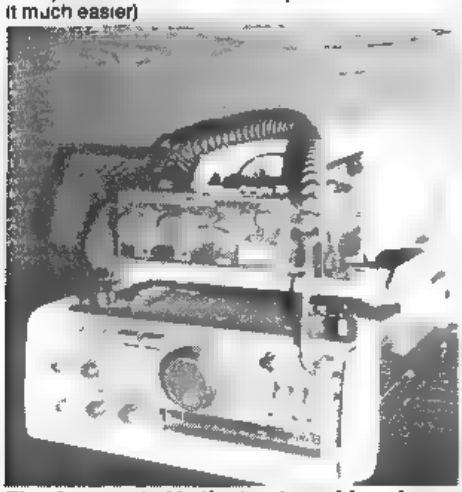
It was possible to access the Townsville repeater (100 km north) and on occasions the Cairns repeater (500 km north), but most of the time two metres is relatively quiet in this area so the next step was to try the 430, and a half inch commercial base, spring and antenna which would operate on 3.5, 7, 10 and 14 MHz, simply by shifting a banana plug which was strong and robust to handle the rough terrain and vibration.

When the 430 was first tried in the tractor there were some problems with a hot microphone and RF bites. The antenna is a little over two metres from the rig and on the same plane with only the windscreen between the two. A very heavy braid strap was used to earth the rig to the tractor and an AT130 fitted. All now works well!

The 430 is mounted on a 9 x 18 x ¾ inch (230 x 460 x 19 mm) piece of plywood. A bracket made to mount the 430 towards one end and in a near upright manner with the AT130 on the underside and a speaker on the right. The six inches (152 mm) of plywood to the left of the rig without anyth ng on it has a bolt through it to hold the rig, tuner and speaker n place.

When the rig is in my landcruiser, everything sits on the centre seat and the extra piece of plywood al ps under the backrest of the seat with the centre seat belt holding all in place.

Ear plugs are always worn for the tractor noise and the volume control of the rig is cranked up so that it can be heard. (One day I think a set of headphones and a boom microphone would make it much easier)



The rig mounted in the tractor cabin using a piece of plywood.

Tractor Mobile Antenna.

VK4FUE/Tractor Mobile.

On transmit, I have had good reports and many stations do not even realise that I am mobile, however it is a mistake to use the processor whilst mobile as it brings up the background noise level on transmit. Most operation is on 14 MHz as it is usually the most active band. If th ngs are quiet the rig is put on scan between 14 100 and 14.300 MHz in search of strong signals. It was also possible to keep twice weekly scheds with my father, VK4QL in Yand na, on the Sunsh ne Coast (1000 km south). These were held on the 30 metre band at midday and were 100 percent reliable with signals between S3- 9.

The best DX day this season, while Tractor Mobile, was when I worked Ed W6SHW and George N6GDS, on 28 MHz in the morning and, with some help from Peter VK2EVE, of Sydney, worked a Russian station in the Ukraine and a station in Puerto Rico on 14 MHz in the afternoon. Not bad — this Tractor Mobile and to get paid to do it! !

The thing I enjoy most is to say Hi to some stations from time to time and I hope to catch some more new stations this coming season when I will have my new home-brew mobile antenna on air. It can be tuned anywhere from 3.4 to 30 MHz whilst mobile. It is 8'3" (about 2.5 metres) long on 3.4 MHz and 6'6" (about 2 metres) long on 30 MHz. It is similar in design to a Webster Bandspanner but has a motor drive to tune the loading coil. Initial tests indicate it to work well.

Listen for me next season — VK4FUE.

Mention was made of Robert being /Tractor Mobile in December's How's DX column, see page 30.

THE SAGA OF THE SUPER ANTENNA WAX

E C Brockbank VK2EZB
115 Myall Road, Cardiff, NSW. 2285

Obviously; all that is needed is a constant and consistent increase in the efficiency of an antenna system. This would mean unlimited power whilst staying comfortably within the limits of the licence. Anything to do with antennas has always been towards the great God: gain.

It seems that this idea must be completely overlooked when it comes to the characteristics of the individual radiator. Something is needed to increase the actual signal emitted from a given dipole radiator. If an intermediate material could be imposed, then this would have the effect of encouraging the outgoing signal to depart from the radiator. Something to minimise friction might be the answer!

Pouring over a formidable array of knowledge yielded a likely formula. When the ingredients were properly mixed and the compound stood ready for use — it looked a rather unpresumptous mess. Now to work out the best method to test this new-found discovery. A few hours work with a bout of mathematics quickly showed that the mixture could be applied in a rather thin layer coating directly to the element of a Yagi antenna. One Yagi was treated with *Super Antenna Wax* and the other Yagi left in an untreated state. Now for the big test!!

After a casual scan across the band the *Super Antenna Wax* was ready for its first trial. The band appeared to be as dead as a dodo. A short CQ never hurt anybody. The band, previously dead, exploded in a flurry of activity. Three thousand — give or take a few hundred — were calling on the frequency. After the storm subsided a signal was selected and contact established. The S-meter at the other end was running the limit, even on a dead band. Everything was wound back except the power supply and the signal still bent the S-meter. Switching to the untreated Yagi once again resulted in the band being as dead as a dodo. My new discovery — *Super Antenna Wax* — was functioning extremely well. The signal was slipping off the radiator and into the ether so well that almost infinite gain was being approached. What a happy development.

The field of antennas and associated improvements are limitless indeed.

FREE SAMPLE: Rub on your antenna and notice an [illegible] alive! (Caution — use [illegible]).

Additional thinking made it appear that, if it were possible to enhance the ability of the radiator to transfer a signal to the ether, it should be possible to retard this same operation. Out came the "musty tomes" and other rudimentary data. Devising a test for the new product was easy. It was simply a matter of applying it to the reverse side of a vertical dipole. The other half of the side was coated with Super Antenna Wax. Reversing the dipole until the new "goo" faced the incoming signal, resulted in a total blackout. The front to back ratio of the single dipole was fantastic. These new "goos" in a twin pack, would be called *Superior Etherial Glue*. Several sized radiators were tried and a true Yagi effect was found by coating both sides of a length of 18 gauge wire antenna. What would happen if the two products were mixed?

My Chinese Abacus revealed that these two materials would respond to a variation in an electro-magnetic field, by effectively varying their resistance and conductivity. It followed that the feedline and antenna could be made infinitely variable. Now I had a system where a signal automatically adjusted the antenna and feedlines for resonance. This made possible an auto-tuned antenna with infinite gain, resonant over the entire radio frequency spectrum and so small that it could sit atop the transceiver.

Eager to help my amateur radio friends, I sold the patent and rights to commercial interests. Unknown to me at the time they had huge interests in the copper and aluminium markets. They did assure me, just last week, that *Superior Etherial Glue* would be obsolete now that the satellites were in! They think high gain antennas are a thing of the past. Maybe, one day!

er

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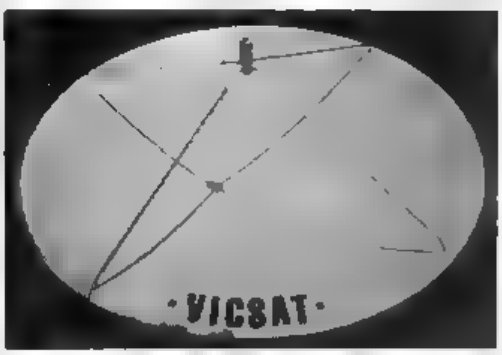

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TWO AMATEURS GO WEST

COVER STORY:

Keith Scott VK3SS
34 Henry Street, Maffra, Vic. 3860

Dolphins at Monkey Mia.

Not wishing to make AR a travel magazine, this is an abbreviated account of a trip to the west.

JOCK VK3DOJ, and the writer left Melbourne in four- wheel drive vehicles, on August 1, 1986 to continue the travels previously documented in AR. Jock was accompanied by a teenage granddaughter and two grandsons, aged 12 and nine years, whilst the writer's co-driver and assistant cook was a much-travelled friend, Victor.

After enduring three cold, wet days in southern Victoria, the entourage reached the opal town of Coober Pedy — a town which looks as though it never rains — and at last everyone was warm!

Three more days of travel and the group reached the new tourist and camping resort of Yulara, situated near Ayers Rock. The boys clambered up and down the Rock eagerly giving a running description on a hand-held UHF Citizen's Band radio.

(This reminded me of the one and only time I climbed the wretched rock with George VK3HV, as co-traveller. George took a hand-held 27 MHz amateur radio up and called CQ (27 MHz was an amateur allocation then). This caused a pile-up of Japanese amateurs calling him. George could speak Japanese rather fluently so was conversing with the JAs in their own language. Several girls were on the Rock at the time, including a Japanese exchange student. She almost became overcome with excitement to hear her language emitting from a small hand-held.)

Next stop was Alice Springs to replenish supplies, then onwards to the north-west over the Tanami Desert Track, eventually arriving at Halls Creek. There, a Cessna plane was hired to fly over the Bungle Bungle Ranges. The Bungle Bungle Ranges have always been guarded by the Aboriginal owners, however, lately they have allowed a few visitors to pass through their sacred ranges. Three days were spent walking and driving along rough tracks, little creeks, gorges and canyons.

These ranges are of unusual formation. They consist mainly of hundreds of high minaret or rounded masses consisting of stratus of various colours — extremely difficult to describe. On the ground, or even up on the rocky walls, ancient species of palms are growing. Rock holes, with perhaps permanent water, gorges, and crevices are everywhere — one could easily become lost.

All of the group were noticeably affected by the grandeur of the area — so quiet and lonely yet so beautiful. One could begin to understand why the aboriginals regard and value such places. (Let us hope the spray-can artists never find their way there!).

After a quick look at the huge Argyle Dam (nine times the size of Sydney Harbour) it was onward along the four-wheel track from Wyndham to Derby. This is a very scenic route, called the Gibb River Track, and time was taken to look at some of the gorges along the way.

A visit was made to John VK6GU and his wife Hope, at Derby. John and Hope run the Royal Flying Doctor Service base in Derby and always welcome visitors.

Then it was on to Broome and Marble Bar to photograph the coloured Jasper (not marble) rocks in the area. The Jasper rocks are particularly plentiful in the creek.

About a week was spent inspecting the iron ore mines and their workings and the now accessible beautiful gorges in the Hammersley ranges and Pilbara region.

Heading towards the west coast, a stop-over was made at an unusually lovely place called Millstream. Here large quantities of good fresh water keep rising above ground to form streams and very large pools, all surrounded by a green tropical-type growth, including date palms which are believed to have been planted years ago by Afghan camel drivers who rested and watered their camels in the area.

Nearing the coast, a visit was made to Dave Holt VK6YA, at Wickham. Dave was very welcoming and produced refreshments prior to a guided inspection of the radio shack and antennas. Dave works a lot of VHF DX and satellite communications with his enviable antenna arrays.

Then it was onward again along the coast to the North West Cape to marvel at the huge antenna network. This network is like a giant spider web, 300 or so metres in the air. An American amateur, Scottie VK6VZ, took the visitors in hand to make the visit friendly and interesting.

Each day, at 0300 UTC, the entourage made contact with the Twenty Metre Travellers Net so that Arthur VK6ART, could chart the progress made. (Jock and I had arranged for amateur friends to go to our home QTHs so that our wives were kept in touch with our health and well-being. My contact was my son, VK3DY, who kept the home receiver tuned to 14.106 MHz for Mrs Scott to monitor.)

We followed the coast as closely as possible and the next most interesting call was Monkey Mia, where several dolphins patrolled the shallows of the beach and entertained the tourists by coming into ankle-deep water to accept fish, pats and rubs along their sides, and generally frolic with the humans. They are lovely creatures and, although they have large mouths with many teeth, they were quite harmless and friendly. Cameras worked overtime here!

Turning east at Geraldton, we passed through old abandoned gold mining areas and villages, arriving at Kalgoorlie, then across the Nullabor and up to Broken Hill.

Whilst travelling, contact had been made on the net with Richard VK5ARM, who was able to reserve sites at the local caravan park — next to him. Upon meeting Richard, we were urged to visit a local amateur, VK2ZI. This we did and met Frank who is a White Cane Operator. He is a remarkable and wonderful OM. Frank lives alone although he has a lady visit to clean and help him with meals. He gave us a warm welcome and naturally adjourned to the shack. Franks walls are covered with QSL cards, which Frank can identify. His equipment is remarkable. Verbal frequency readouts are used, otherwise Frank handles all the equipment with very little effort. His talking pocket calculator is amazing. He asked it what day (date supplied) I was born on (and that's a long time back), and it promptly replied that the day was a Friday — it was too!

Frank VK2ZI, at his Broken Hill QTH.

Frank has UHF and VHF beams with which he can track and work satellites. He also has the cards to verify it. This rewarding visit filled us with admiration for one who accepts his disability and derives obvious pleasure from amateur radio.

Inquiring about our return route via Menindee, Frank said we would pass a hotel which is owned by two friends of his and urged us to call in — which we did. The hotel was small, old and quite isolated. We called in to pass along Frank's greetings and to our mutual delight discovered it was possible to work Frank on two metres. It was then possible for Frank to speak with his friend, Ann. Meanwhile, a small pony joined the party and Ann suggested the boys may like to have a ride — something new to them! Promptly, the pony set off to the bar door which it entered and thrust its head across the small bar counter. It was rewarded with a bag of potato crisps which it chewed with obvious pleasure. After separating the plastic bag from the crisps it made signs for more! (The writer has a very interesting movie of one small pony with two boys on its back, eating potato crisps across a bar counter). This added to other phenomenal oddities filmed over the years like — one alcoholic goat at Rawlinna, WA, who picks up stubbies unaided, tilts its head back, drinks the contents, smiles and looks for more! Then there are the Currawongs raiding the food supplies in my vehicle, Dolphins at Monkey Mia, a camel at Silverton picking up cans of soft drink, crunching the can and drinking the contents, kangaroos sitting beside me at Carnarvon Gorge, sharing breakfast and goannas eating out of my hand at Wingan Inlet. And many more.)

Oh, the nostalgia!

DID YOU KNOW ? ? ?

...the famous Slim Jim™ is much easier to tune when connected via a ¼ λ balun?

Apparently this is a balanced antenna, which would explain many of the anomalies observed when tuning them — coaxial length, feed-point, polarity, etc. Refer to any good handbook for details on ¼ λ baluns.

—Contributed by David Horsfall VK2KFU

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New Zealand Two Metre &

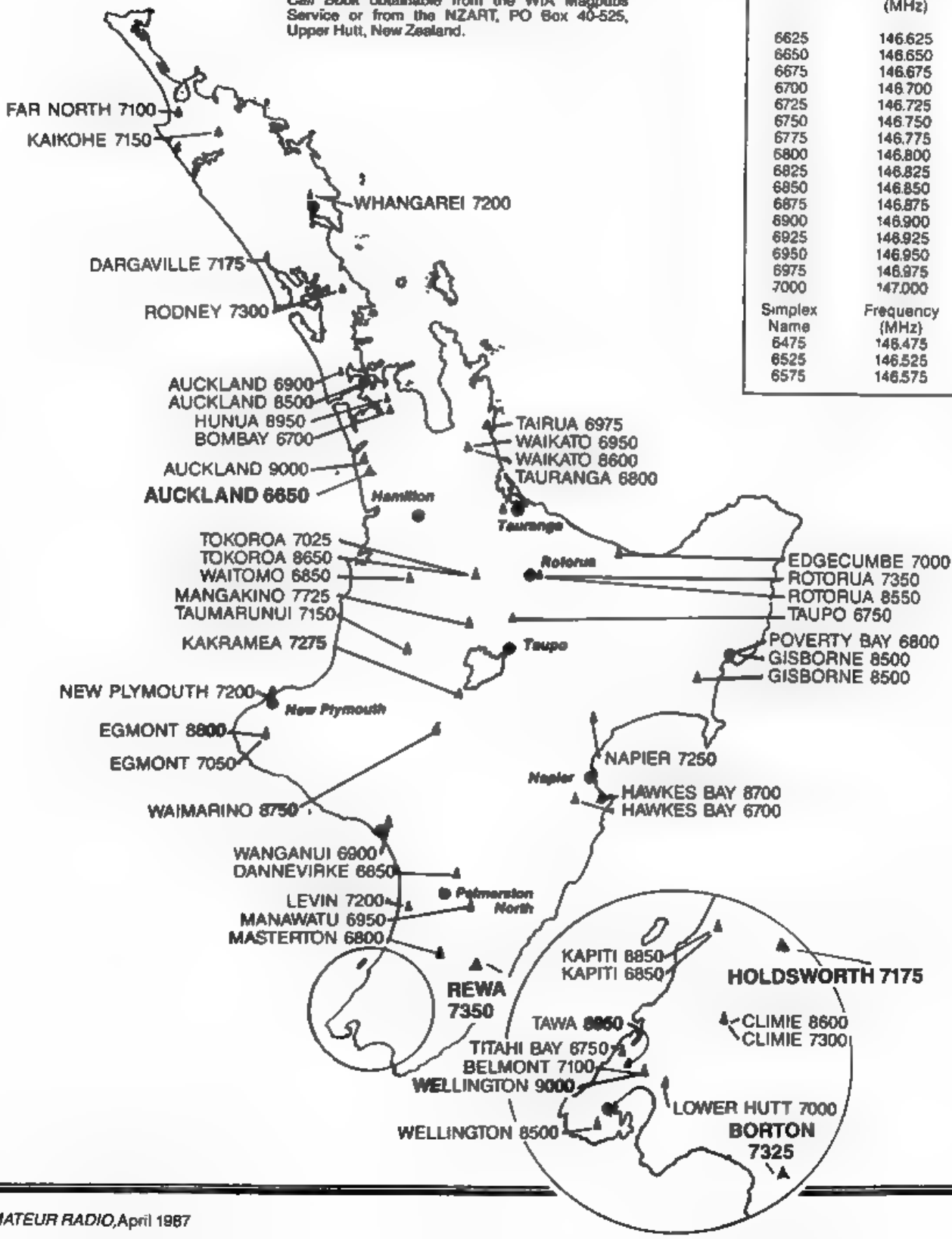
These maps have been prepared from information recently supplied by Jamie Pye ZL2NN, Secretary of the NZART Frequency Management Working Group.

Full details are published in the *NZART 1986 Call Book* obtainable from the WIA Magpubs Service or from the NZART, PO Box 40-525, Upper Hutt, New Zealand.

TWO METRE

Repeater Name	Repeater Output Freq. (MHz)	Input Freq (MHz)
6625	146.625	146.025
6650	146.650	146.050
6675	146.675	146.075
6700	146.700	146.100
6725	146.725	146.125
6750	146.750	146.150
6775	146.775	146.175
6800	146.800	146.200
6825	146.825	146.225
6850	146.850	146.250
6875	146.875	146.275
6900	146.900	146.300
6925	146.925	146.325
6950	146.950	146.350
6975	146.975	146.375
7000	147.000	146.400

Simplex Name	Frequency (MHz)	
6475	146.475	calling
6525	146.525	
6575	146.575	

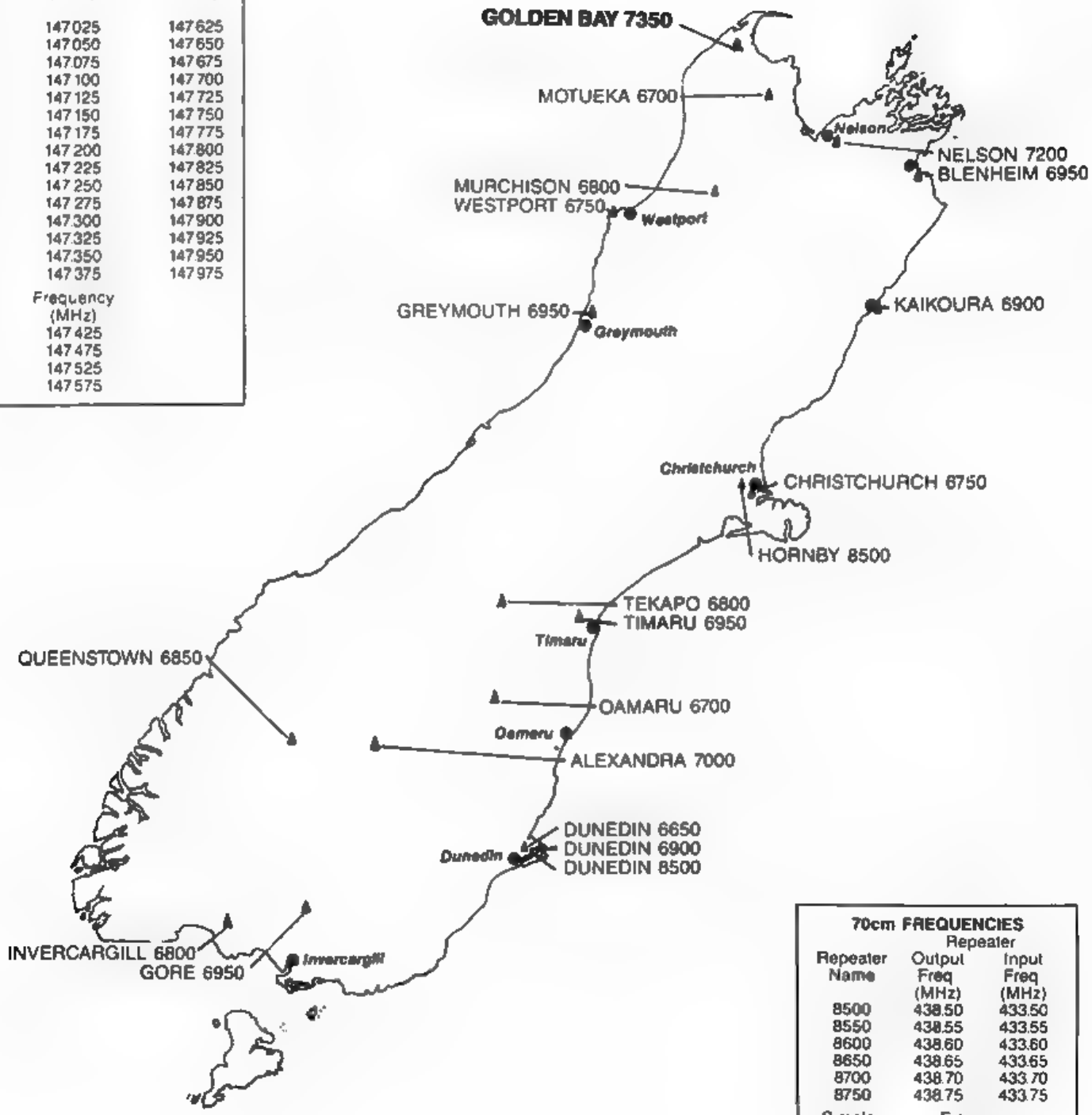


70 Centimetre FM Repeaters

FREQUENCIES

Repeater Name	Repeater Output Freq (MHz)	Repeater Input Freq (MHz)
7025	147.025	147.625
7050	147.050	147.650
7075	147.075	147.675
7100	147.100	147.700
7125	147.125	147.725
7150	147.150	147.750
7175	147.175	147.775
7200	147.200	147.800
7225	147.225	147.825
7250	147.250	147.850
7275	147.275	147.875
7300	147.300	147.900
7325	147.325	147.925
7350	147.350	147.950
7375	147.375	147.975

Simplex Name	Frequency (MHz)
7425	147.425
7475	147.475
7525	147.525
7575	147.575



70cm FREQUENCIES

Repeater Name	Repeater Output Freq (MHz)	Repeater Input Freq (MHz)
8500	438.50	433.50
8550	438.55	433.55
8600	438.60	433.60
8650	438.65	433.65
8700	438.70	433.70
8750	438.75	433.75

Simplex Name	Frequency (MHz)
3300	433.30
3350	433.35
3400	433.40
3450	433.45

VHF UHF — an expanding world

Eric Jamieson VK5LP
1 Quinns Road, Forreston, SA. 5233

All times are Universal Co-ordinated Time and indicated as UTC

AMATEUR BANDS BEACONS

FREQUENCY	CALL SIGN	LOCATION
50.010	JA2IGY	*Mie*
50.060	KH6EQI	*Honolulu*
50.075	VS6SIX	*Hong Kong*
50.109	JD1YAA	*Minami Tori-shima*
52.013	P29BPL	*Lolosta Island*
52.020	FK8AS	*Noumea*
52.100	ZK2SIX	*Niue*
52.150	VK0DS	*Macquarie Island*
52.200	VK8VF	*Darwin*
52.250	ZL2VHM	*Manawatu*
52.310	ZL3MHF	*Hornby*
52.320	VK6RTT	*Wickham*
52.325	VK2RHV	*Newcastle*
52.345	VK4ABP	*Rockhampton*
52.350	VK6RTU	*Kalgoorlie*
52.370	VK7RST	*Hobart*
52.420	VK2RSY	*Sydney*
52.425	VK2RGB	*Gunnedah*
52.435	VK3RMV	*Hamilton*
52.440	VK4RTL	*Townsville*
52.450	VK8VF	*Mount Lofty*
52.460	VK6RPH	*Perth*
52.465	VK6RTW	*Albany*
52.470	VK7RNT	*Launceston*
52.485	VK8RAS	*Alice Springs*
144.019	VK6RBS	*Busselton*
144.400	VK4RTT	*Mount Mowbullan*
144.410	VK1RCC	*Canberra*
144.420	VK2RSY	*Sydney*
144.430	VK3RTG	*Glen Waverley*
144.465	VK6RTW	*Albany*
144.470	VK7RMC	*Launceston*
144.480	VK8VF	*Darwin*
144.485	VK8RAS	*Alice Springs*
144.550	VK5RSE	*Mount Gambier*
144.565	VK6RPB	*Port Hedland*
144.600	VK6RTT	*Wickham*
144.800	VK8VF	*Mount Lofty*
144.950	VK2RCW	*Sydney*
145.000	VK6RPH	*Perth*
432.057	VK6RBS	*Busselton*
432.160	VK6RPR	*Nedlands*
432.410	VK6RTT	*Wickham*
432.420	VK2RSY	*Sydney*
432.440	VK4RBB	*Brisbane*
432.445	VK4RIK	*Cairns*
432.450	VK3RAI	*MacLeod*
432.535	VK3RMB	*Mount Buninyong*
432.540	VK4RAR	*Rockhampton*
1296.171	VK6RBS	*Busselton*
1296.420	VK2RSY	*Sydney*
1296.480	VK6RPR	*Nedlands*
10300.000	VK8RVF	*Roleystone*

Firstly, to deal with the carry over of a few letters from last month when there seemed so many other matters to report. One letter from Peter VK3DU, pointed out that the six metre "season" appeared to open at the same time as the previous year, on 6/11 with an opening to ZL warning of which was given by the ZL television sound on 50.750 MHz. Commencing at 0645, ZL1AON, ZL1TZA, ZL1UDI, ZL1AK, ZL1AKT and ZL3NE/1, who mentioned he had worked FK8, VK2, 4 and 5, during the day, ZL1UKQ and finishing at 0810 with ZL2UBG. Kerry ZL2TPY, was working VK5NC and indicated he was also working into Sydney on 70 cm. At 0835, ZL2AQR worked VK5ZDR. The band closed at 1030 after being open for nearly four hours. Peter made all his contacts with 10 watts and a three element beam.

Peter VK3DU, also inquired if anyone knew whether ZL8HV has six metre equipment as he would possibly be the only station to work since Chris ZL8OY, had left Kermadec? I do not remember hearing ZL8HV at any time on six metres through December/January.

Neville VK2QF, wrote to say he found the six metre DX from his location at Hargraves, some 30 km south-west of Mudgee, in Central New South Wales, was decidedly lacking! He had very little activity in November and only sporadic paths after 24/12. He spent a lot of time trying to find 5W1GA, but it seemed the propagation was not reaching him. His location is poor when looking north, south and east, but okay to the west. Hence, it was rather galling to hear the Sydney stations working all and sundry, but unable to share in the contacts himself. He believes the lower angle stations from a long distance don't reach him behind the hills and this was so during former F2 openings across the Pacific to USA and Mexico.

Apart from the VK contacts he had, Neville worked on 5/12 at 0811 VK0SJ, 12/12 at 2135 FK1TK, 13/12 at 0332 FK25A, 19/12 at 0426 3D2ER (new prefix for him), 21/12 at 0622 ZK2RD, 26/12 at 0227 P29ZEF, 3/1/87 at 2153 3D2ER, 4/1 at 0427 3D2ER. The ZK2 beacon was heard regularly through mid-December around 2100 about 519. 4/1 was one of the best days again with the ZK2 beacon in for hours.

Nev would like to thank VK4ZNC, for going into the Pacific area and providing so many contacts from hard to get places, and commends his operating practices.

Neville apparently has a location much like mine, and could possibly benefit from the stacking of antennas on six metres. I found myself hopelessly outclassed years ago with the single six element wide-spaced (26 foot boom) Yagi when trying to compete with the stations in the clear on the Adelaide Plains or wide open country areas. In desperation, I erected two eight-element LP Yagis stacked vertically with instant success. For the first time I could hear JAs at S9 and as the peak of the cycle approached found I could mix it with most of the other operators and have my share of contacts. These days of mainly Es contacts, they still perform so well that many long distance contacts are a dream. Most of my contacts are made with about 40 watts of power but this can be talked up to 200 watts if the occasion arises, which is so rare these days!

As a final comment, Neville mentioned having largely lost interest in the Ross Hull Contest, but would be prepared to support a six metres only contest of short duration, say two to five days, and suggests others would do the same.

OPERATING FROM NEW ZEALAND AND FIJI

Steve VK4KHQ, from Mount Isa, writes to say he recently operated as ZL0ABE in New Zealand and 3D2SJ in Fiji, using his FT-208R two- metre hand-held. The ZL licence was $NZ6 and took about five weeks to obtain. The 3D2 licence was F$10 and took eight weeks, and had to be collected from the Suva P&T Office on arrival and is a 12 months renewable licence.

In New Zealand he spent two weeks in Invercargill (right at the bottom) where they have access to 6800, 6950, 6750 and 6850 plus an AM repeater at Bluff (144.650 in 145.775 out), which accepts FM quite okay!

While visiting Malcolm ZL4NO, the Dunedin repeater came up to S9 +40 dB on his two element ZMX quad and stations as far north as Oamaru would be worked. Some VKs had been worked during December. A new repeater on 6750 has been on test at Clinton and the new regional repeater (7250) at Christchurch, is giving excellent coverage.

On 5/1/87, he operated "tram mobile" and contacted as many stations as his two heads would allow during another spectacular lift. He also managed to work ZL4NO via five repeaters which he believes might almost be some sort of record for a hand-held.

There are 34 amateurs in Fiji and the two metre population seems to consist of two TR2400 hand-helds. He met Raj 3D2ER in Suva, who is very active on six metres and HF. He monitors Channel 0 sound and calls on 52 050 MHz SSB. During the visit, a contact was made with ZL1TWR on 52.050 who was the only contact during a solid opening on 12/1.

Raj recently retired from a career in Electronic Engineering with the Fijian Government and now enjoys playing RTTY, AMTOR, etc on his C64 keyboard and can be found on 14.309 MHz, 0200 to 0400 UTC Mondays to Friday and on 14.280 MHz at 0330 UTC on Thursdays and Saturdays talking to friends. (This could be worth noting as six metres appears to be open across the Pacific).

Steve now has six metres, two metres and 70 cm capability and would be interested in scheds with anyone prepared to point their beams at Mount Isa. Please contact him if interested.

TASMANIA

Joe VK7JG, sends a list of his two metre workings this season. On 22/12 at 2151 he worked VK4AUK 5 x 8; 2155 VK2DDG 5 x 9; VK4VC 5 x 9, 2201 VK4KHG 5 x 9, 2319 VK4ASB, VK4GC, VK4ARN all 5 x 9, VK2YDC 5 x 5; 2326 VK4LC, VK4KJL, VK4ZSH and VK4GP all 5 x 9; 2330 VK3ZQB/M4 5 x 8. On 23/12 0045 VK4RH 5 x 9; 0050 VK4UX 4 x 5, 0058 VK2CMC 5 x 9; 0058 VK2DVZ 5 x 8. As well, he maintains his numerous contacts to VK3 and can work David VK3AUU when ever he is on.

Joe should be operational on 1296 soon when the two 28 element loop Yagis are erected.

On two metres Joe still needs a VK6 for WAS. Maybe he was successful during the openings around the end of January. The only active stations from Launceston this year were Col VK7LZ, Geoff VK7ZOO and Joe VK7JG.

EME NEWS

Doug VK3UM, advises he has now added a further eight Yagis to his array to give him a total of 24 with spacing according to K1FO. He is now reading 15.5 to 16 dB of sun noise or about 29 dB gain. The array is being used in conjunction with a 2SK571 preamplifier with a noise figure around 0.4 dB. He is now able to observe Sagittarius at 4.25 dB. He believes the upgrading of the feedlines has also helped to improve the whole structure. With the limited time so far available to check he has found his echoes to be weak due to the wrong Faraday rotation but is looking for better results in the next round of scheds and tests soon.

Lyle VK2ALU, in *The Propagator* reports they are still not completely operable following the damage from the last intruders. A new alarm system is to be installed.

Former problems with the received level of EME signals when compared with their own echoes have been referred to Dick Turrin W2IMU who advises the receiving system should be connected via the coaxial change-over relay to each of the transmit and receive ports on the W2IMU feed-horn of the dish. It is to be left in this configuration for several months and listening tests carried out from time to time on signals from other stations to compare their level via the right hand and left hand polarised feed ports on the W2IMU feed-horn. In theory, there should be a large difference in favour of the right hand polarised port.

In the meantime however, the receiving preamplifier and converter units from the EME dish are to be installed for a short period on Lyle's six foot dish at his home (being part of his new 1268-1270 MHz Mode L satellite system), so that Col Mass VE7BBG, can carry out tests with him on 1296 via the moon. Col considers his EME

signals may be just copiable when the moon is at perigee.

METEOR SCATTER TESTS

Doug VK3UM, is trying to arouse some more interest in contacts via meteor scatter and suggests a frequency of 144.350 MHz be used with five second sequencing. He says it is most important that, once you have transmitted on what you believe to be 144.350 MHz, that you do not shift your transmit frequency and your clock should be synchronised to the second with UTC, either by using WWV or VNG. You can start transmitting at any time but the following sequences should be in strictly five second intervals; eg transmit 2100.00 to 2100.05, listen 2100.05 to 2100.10, transmit 2100.10 to 2100.15, listen 2100.15 to 2100.20 and so on.

Doug says it can be quite surprising just what you can hear sometimes although initially you will need a high degree of patience, but as more stations try the greater your chances of hearing either scheduled stations or random stations.

THE VK6 SIX METRE BEACON STORY

During a six metre contact with Bob VK6BE, during December, we got to talking about the overall value of beacons. During this conversation, Bob started reminiscing over the old VK6VF beacon and, in response to my request, he has sent the following information which should be of interest to most readers.

"VK6VF was to be the first VHF beacon in Australia and one of the first in the world. It was built following news that the Japanese had put an amateur beacon on 50 MHz, JA1KGY, and a decision was made by the WA VHF Group to attempt to obtain permission to operate an amateur beacon on the 50 MHz band. The Group was told it could operate a beacon provided it was attended at all times it was transmitting.

"As a little background, in 1956/56, Australian amateurs had their 50 MHz amateur band taken from them, and a band from 58 to 60 MHz given in its place. Then, in response to requests from the WIA, which, in turn, was spurred on by some hostile VHF operators who felt, rightly or wrongly, that the WIA had willed away their 50 MHz band without consulting them, the Radio Branch of the PMG's Department agreed to allow Australian amateurs to use the 50 to 54 MHz band during the International Geophysical Year when record high sunspot activity had been predicted.

"Despite the proviso that the beacon has to be attended at all times when transmitting, the Group pressed on with the building of the beacon with parts donated by members. The transmitter was to consist of a 7C5 oscillator/multiplier, followed by another 7C5 as multiplier/driver and 807 final amplifier running 20 or so watts input in Class C. (The 7C5 valve was a loctal base equivalent to the 6V6 power pentode; its chief virtue being that it was freely available in some disposals equipment). The transmitter was cathode keyed to provide CW identification. The transmitter for the beacon was built by the late Don Brown VK6ZAV.

"Next a keyer had to be built and a couple of Group members, including Don Graham VK6HK, set to work to design one. This was no easy task in those days before digital devices. The only feasible method was to use a mechanical contrivance of some sort. A motor was obtained from an old heavy duty power meter (AC mains type), and the drive shaft had a circular disc fitted, into the rim of which were cut slots to leave the outstanding part of the rim forming Morse code for the call sign VK6VF. A piece of metal trailed on the rim forming a crude key. On test, problems were found as sparking burned away the keying contacts which were too light. Some other means of forming key contacts had to be found. The second attempt was a keying disc made of heavy bronze plate about four millimetres in thickness and 15 cm in diameter. The keying contacts were made from a set of automotive contact breakers (distributor points), with the shaped rim of the wheel running against the fibre portion of the contact breaker set. This opened and shut the points in the correct sequence and proved to be most successful.

"The beacon was tested and worked well and was put on a shelf in the shack of VK6BE, in Kalamunda, a shack which also doubled as the operator's bedroom! Now for hours of operation. According to the Radio Branch, the operator had to be present at all times. However, the Branch did not stipulate that the operator had to remain awake, so the beacon ran all night, every night. Unfortunately, it had to be shut off during working hours, but as VK6BF was a teacher, there were long hours of operation during school holidays, weekends and the off periods really only observed school hours. According to some rude persons, this only constituted an insignificant portion of the day, anyway!

"The beacon produced results very quickly. ZL and VK9 (Papua-New Guinea in those days) had been worked on Es propagation on six metres many times before, but not on F type propagation such as we were getting into Japan. However, for several days at the peak of the cycle, ZL1DS and others were worked on F type propagation, as also was a VK9 station. Both of these countries were worked in the early morning, and both said the only reason they knew the band was open at all was through the beacon being heard. Second-hand reports came through that the beacon was being heard in Hong Kong, the Philippines, etc but these places had little six metre operation at the time and therefore no contacts took place with them.

"To the operator, VK6BE, the beacon was a cross to bear at times. The keyer portion sounded rather like a train travelling on a railway line — you know the familiar clackety-clack, clackety-clack sound? The motor was very sensitive to line voltage variations and used to key very slowly when the line voltage was down a bit. The result was that, during the day, the keyer sent at about 12 WPM, but after midnight, when the line voltage rose, the clackety-clacks went at about 40 WPM. Rather insomnia-making, to say the least!"

Thanks for that information Bob. At least your enterprise and that of the support Group was the forerunner of the now outstanding Australia-wide coverage of the VHF/UHF beacon network which probably ranks as one of the best in the world today and has proved to be of inestimable value in promoting many contacts which otherwise might never have been made. Well done!

A parting comment not related to beacons came at the end of Bob's letter when he said that six metres has been available in Albany almost every day for six weeks (to 12/1), and considers these Es openings to be the most extensive he has known in his 32 years of operating on the band. So that is an interesting comment from a VK6.

FURTHER EME NEWS

In the January/February issue of *SERG Newsletter*, from Mount Gambier, is a chart prepared by Chris Skeer VK5MC, showing the 1987 EME windows for the USA. They are:
April 2: 0048; 8: 0552; 29: 2340. May 5: 0348. June 2: 0228; 29: 0024. July 20: 1816. August 16: 1604. September 12: 1352; 18: 1900. October 10: 1240; 15:1700. November 6: 1020; 12: 1532. December 4: 0912; 9: 1328. Window times are start times. During all windows the first two minute period is a transmit period for VK5MC.

The VK5MC transmit frequency is 144.012 MHz and Chris will listen from 144.000 to 144.010 MHz. If signals are strong he may break into one minute sequences so you are asked not to call on his frequency as you will not be heard by Chris and may be causing QRM. His window will peak approximately 10 to 14 minutes after the start time, although he normally hears his own echoes right from the start. Scheds can be difficult to keep at times but Chris will endeavour to be on during all windows.

Those of you with reasonably good antenna systems, preferably with a mast mounted preamplifier, should listen from time to time and, if Chris is strong enough, give him a call. I have not heard Chris so far, but I have heard quite a few other EME stations. During the last ARRL Contest, Chris worked W5UN, WA6MGZ, W7ID, W7FN and K6MYC.

OVERSEAS NEWS

From "The Short Wave Magazine" courtesy Steve VK5AIM, comes a report about a project to try and achieve a two metre contact between Cyprus and England. The distance is about 3200 km which is within Es range. They hope to try during May and June (Northern Hemisphere summer) from suitably located stations.

A recent DXpedition by the Square Bashers Expedition Group, in Scotland, netted 13 QSOs via meteor scatter on six metres, whilst random CW operation on 144.100 via MS often resulted in as many as five stations replying. A lot of effort obviously went into the expedition as they were operational on six, four and two metres, 70, 23 and 13 cm, plus HF operation!

To try to remedy the extreme fall off in activity on six metres after the Es season in the UK, a suggestion has been made to hold "activity nights" between 7 pm and midnight, local time, when operators are invited to come on and call on the hour. Such an idea might be worth trying in VK. It is interesting to note that after about two years of operating on 50 MHz there is talk of waning interest!

I4BXN runs no less than one to two kilowatts to eight 20 element long Yagis. Calculations indicate his signal from Italy should be readable on CW most of the time in the UK.

THIS MONTH ON THE BANDS

Six metres has remained relatively quiet with a few openings to VK2 and VK4, which just seem to appear from nowhere. Late January saw a couple of openings to ZL. On 26/1, Mick VK5ZDR worked Jim VK9NS, on Norfolk Island 5 x 9 at 0715.

On the two metre scene, I still have to rely on the reports of others as my two metre system is in disarray with the rotator completely rusted out and having to be replaced. Water must have got in the so-called seal around the centre section because the motor assembly under the bell housing is in good condition. So, presently the antennas are down and I am having a lot of trouble finding a suitable rotator.

Trevor VK5NC, advised me that VK6AOM, at Esperance, worked VK7DC, at Burnie, on 8/2 on 144.100 MHz at 1041 and 432.100 MHz at 1207; it is believed to be the first 70 cm contact between VK6 and VK7. Trevor said he was able to raise and assist the contacts. VK6AOM and VK6BE (Albany) also worked into Melbourne on two metres around the same time.

The conditions at the time were so good that Trevor VK5NC, running one watt, worked VK7DC (10 watts) on 1296 MHz at 1200 UTC with signals 5 x 9+ and he also heard Wally VK6WG putting in a good signal on 1296. VK5NY and VK3ZBJ, were also on 1296. VK5NC worked VK3AUU on both 144 and 432 at 5 x 9+++, so signals must have been good!

Mick VK5ZDR, filled in some other gaps for me listing the following as his contacts of importance on two metres and 70 cm:
14/1 VK3AOS and VK3NN, 18/1 VK3NN, VK3UM and VK3NM, 22/1 VK3KEG and VK3AUU, all these contacts were on two metres. On 28/1 VK3AOS on two and 70; 30/1 VK3AUU on two then, between 0941 and 1052, he worked 10 stations in VK4 on two metres with signals to S9. Most were in the Brisbane/Ipswich area. Then, late at night he worked VK3YLV on two and 70 from Horsham.

On 1/2 VK3AUU on two, followed by VK3UM both 5 x 9; VK3YLB on 70; VK3WN on two, VK3DQJ on two and six metres, VK3AZY on two — all these were between 2030 and 2330/ 8/2 VK6AOM on two and VK6WG on two and 70 at [illegible].

Mick pointed out that almost all his contacts have been in the mornings starting from around 2030, so it is a case of the early bird catching up with the DX.

Also, into early morning activity is Roger VK5NY, who looks down on the world from his hill-top site at Mount Wilson, not far from Willunga. Regular scheds are kept with VK3AUU and VK3KEG, on 144.100 MHz. Barry VK5BVT, at Aldgate, (another good area) joins in and they start at 2015. Signals vary, but are often up to S9. In addition, daily use is made of two aircraft between Adelaide and Mount Gambier around 2230 to contact VK3AIH, VK3LK and VK3ZQB in the Portland and Port Fairy areas using aircraft enhancement with satisfactory results. Roger is certain two aircraft are involved.

On 1296 MHz, it appears I may have missed reporting that on 26/12/86 Roger VK5NY, on SSB, worked VK3KAQ/3 on FM at 0833 for a distance of

730 km, which constituted a VK3 distance record.

Roger reports he can have reasonably regular contacts with Trevor VK5NC, in Mount Gambier, on 1296 providing two metres and 70 cm are in good shape. If those bands are not providing good signals then 1296 will be weak.

On 9/2, Roger VK5NY observed a somewhat unusual weather pattern with two high pressure systems, one either side of Tasmania with an impending cold front in between. This system enabled him to work VK7DC in Burnie at 2222 on 1296 with 5 x 9 reports both ways! Full quieting on FM. It was the first time Roger had ever observed such strong signals from that direction. Eight minutes earlier that had worked on 70 cm, Roger gave 5 x 3 and received 5 x 7 so by comparison, the 70 cm signals were down considerably on the 1296 signals. So, obviously there was no tie up whatever between two metres and 70 cm as giving possible clues to what might be happening on 1296. The day before there had been good contacts with VK6BE in Albany on two metres and 70 cm, so this probably led to the good VK7 conditions anyway.

Overall, Roger believes the late January/early February period enhanced conditions which we often experience in the southern regions were not as good as some years but still good enough to create a quite high degree of interest. Roger would have likes to have been in a position to try 2304 MHz during the big lift on 1296 to Tasmania.

OTHER NEWS

Peter VK3YRP, sent me a copy of his covering letter to the Federal Contest Manager, regarding the Ross Hull Contest, and he obviously found some improvements in the last contest when compared with the previous year. Peter says in one paragraph:

"DX contacts of any "modest" distance were not rewarded over "local" contacts. For instance, the majority of six metre DX contacts were worth only one point, compared to two points for a local contact. Sometimes it is necessary to hang around for 10 to 20 minutes to get an exchange."

On the above matter, I think the reasoning over a quite long period of time has been that six metre contacts over the prime Es distances up to, say, 2000 km are usually not hard to make even with low power, whereas a six metre contact in excess of, say, 200 km may be more difficult hence the increased points for the intermediate distances. The purely local, across town type of contact also gains from the increased points but it may also ensure that stations do come on and are then around to work the DX when it appears. The alternative would be to cut out all local contacts of, say, less than 100 km or even 200 km as some operators advocated previously, although I tend to think this action could be counter-productive by suppressing overall activity.

Peter sent a sample page of his log with the addition of relevant Locator Squares added and, whilst there does seem a case for the use of squares, one also has to remember that it would virtually mean going back to more complicated log keeping. It would be possible to still have the broad distance boundaries such as exist at the moment with all squares within those distances counting as now, but there would be a need for knowing exactly where a station was when it came to the boundary lines! I am sure it would be necessary to issue a special contest map which all contestants would need to use in determining their points. Numbers could still be exchanged as now, plus the exchange of squares using the first two letters and figures to make a four part exchange of squares information; eg QF68. I would not like to see any signal report or other figures attached to the squares, they should be separate. Anyway, it is all food for thought, so please respond to my request for feedback from last month's issue.

Although somewhat dated now, it is still interesting to note the equinox periods can still provide some enhanced conditions on six metres. From *CQ ham radio*, from Japan, courtesy Graham VK6RO, I note that on 26/10/86, Japanese stations worked VKs 4FXX, 2DDC, 2XJ, 2BQV 1VP, 2BKL, 6WD, 6IU and 6YA. On 27/10, they worked VKs 8ZMA and 6YA. On 1/11, VK2XJ, on 4/11 VK8AH, on 8/11 ZL2TPY. These were in addition to hearing beacons VKs 2RHV, 2RSY and 6RTT. The coverage therefore extended over four States and five call areas.

As you read this it will be April and another equinox is upon us, so keep an ear on both 50 and 52 MHz, you may be able to work Japan, Hong Kong, Korea or the Philippines.

CLOSING

My thanks to those people who have helped me fill in while some of my antenna system is at ground level. It may be another month before they can be raised again.

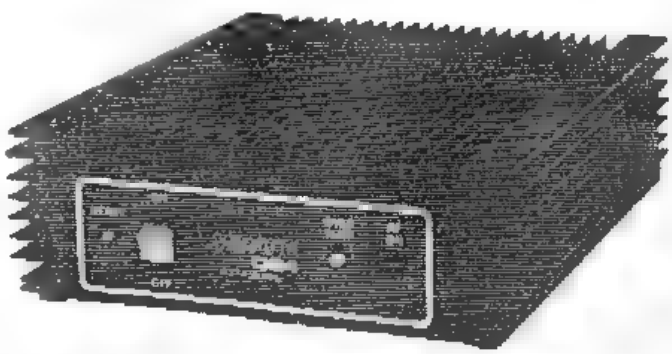
Closing with two thoughts for the month: *Perhaps parents would enjoy their children more if they stopped to realise the film of childhood can never be run through for a second showing* and *The past is really almost as much a work of the imagination as the future.*

—73 *The Voice in the Hills.*

MIRAGE

COMMUNICATIONS EQUIPMENT

A1015	50-52 MHz AMP 10W IN 150W OUT
B23A	144-148 MHz AMP 2W IN 30W OUT
B23S	144-148 MHz AMP 2W IN 30W OUT
B108	144-148 MHz AMP 10W IN 80W OUT
B215	144-148 MHz H/T AMP 2W IN 150W OUT
B1016	144-148 MHz AMP 10W IN 160W OUT
B3016	144-148 MHz AMP 30W IN 160W OUT
D24N	430-450 MHz AMP 2W IN 40W OUT — TYPE "N" CONNECTOR
D1010N	430-450 MHz AMP 10W IN 100W OUT — TYPE "N" CONNECTOR
D3010N	430-450 MHz AMP 30W IN 100W OUT — TYPE "N" CONNECTOR
MP1	HF WATTMETER 1.8-30 MHz
MP2	VHF WATTMETER 50-200 MHz
RC-1	REMOTE CONTROL/18 FOOT CABLE



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How's DX?

Ken McLachlan VK3AH
Box 39, Moorooibark, Vic 3138

Where have all the true DXers gone? Do they only come out of hibernation when a rare country is scheduled to appear? Are the majority of amateurs in Australia interested in DXing? I know that there are a number of amateurs who, whilst waiting for the day that certain countries will appear and that is when they will be heard, are causing a hiatus on our DX bands.

I wonder at times if this column is read by the majority of WIA members, as when I commenced a "Let us see your shack" competition for this year, with a handsome prize attached for the winner, I have at this time, received only one entry (yet to be published).

On the other hand, I receive a considerable amount of mail, as regards the correct addresses for rare QTHs and the gathering of QSLs and certificates owed to overseas amateurs.

When a station from a rare country appears, calls one hasn't heard for a "coons age" appear out of the woodwork, like magic. It is apparent that there are a lot of listeners, with very few talkers or maybe they are talking on the bands I do not listen on at the present time.

One of the constant contributors to this column, maintains that DXCC can be achieved with very little effort, within a month. I agree and still maintain the stations are there, if one cares to call. So to one and all, please make a resolution that you will work the key or the voice for so many QSOs per week, or the VK mainland will start to climb the wanted list of the newly licenced amateurs in many countries.

SILENT KEYS

It is sad to relate that Don Riebhoff ex-K7ZZ/CT4AT, XV5AC, XU1DX, 1S1A and the holder of many other calls, was unfortunately killed in a motor vehicle accident recently.

Don, was one of those gentlemen that loved the hobby and, during his service in the American Diplomatic Corps, popped up from many different QTHs. I first met Don on air in 1974, and we started regular QSOs with the boys and girls in Barbados on 14.164 MHz, where such calls as "Woody" 8P6CC, Allan 8P6AH, Jill 8P6CP, Ian 8P6FU and many others became an evening ritual, as we entertained them, generally whilst they were having breakfast.

It became so friendly that Ian 8P6FU and Nick 9Y4NP (SK), both commercial airline pilots, used to call in from the Collins equipment when they were airborne, giving all listeners a run down on the weather and views. Nick flew the long distance hauls whilst Ian used to hop around the islands and when coming into land at Barbados could never pick the QTH of Allan and Jill. Not to be out done, Allan painted his call sign on the roof, with the help of others — there were no more problems. Once Ian saw the landmark, he announced he was coming in to land his aeroplane and passengers and went QRT, reappearing after touchdown.

I have a vivid recollection of a QSO with Don in XU land, whilst he was having his swimming pool filled by water carrying cement mixers. Suddenly shelling by the unfriendly neighbours commenced. Don's spontaneous reaction, is not printable but he didn't hesitate in promptly going QRT. Within weeks, he popped up again with his usual massive signal signing from S2, then from CT. He was one of the few to work the last 3Y1 Bouvet Island station on 20 metres, even though his beam was jammed in the wrong direction.

Don's positive organising ability and amiable personality will be missed by all who had the pleasure of contacting him and his sudden death is a sad loss to the hobby of amateur radio, which we are privileged to use.

Another great loss to the hobby is the death of "Buz" Reeves K2GL, who passed away on December 23, in his 80th year. Buz, during his career founded many companies, the best known was Cinerama (the theatre technician's nightmare). Cinerama also developed stereo magnetic recording film. In the 1970s, his company received two Academy Awards for the technical developments. Another of his companies developed the X-ray cutting of crystals during WWII. For this, the company was awarded many citations. Buz, assembled a magnificent amateur station that consisted of 12 operating positions equipped with modern technology feeding an antenna farm of 30 and 60 metre towers, several dozen beams and quads, including a three element 80 metre beam. The station has used the calls K2GL, K2GM, WA2ZAA and N2AA winning many major contests. Buz will be sadly missed by all that knew him.

ACTIVE RTTY STATIONS

For the RTTY enthusiast, it is known that the following overseas stations are QRV on the 20 metre band. 9Y4BK, CT1AUR, GM4LXZ, GW3SON, HH8BG, KX6BU, SP5HL, T77U, UZ5AWF and ZL7DE.

TROMELIN ISLAND

Yoland FR5AI, hoped to be signing /T for the duration of March and the first week of this month as duties permitted. QSL cards to his home call please.

KERGUELEN ISLAND

Reliable sources indicate that considerable activity may be expected from this area in the next year from a number of amateurs assigned to the base. It would be prudent to get confirmations of this area on all bands while the opportunity is there.

ST PETER 1 ISLAND

The boys did a tremendous job and are to be congratulated, even though they received severe criticism regarding their split frequency operation. The criticism was mainly from the self-appointed "policemen," that come to light in such circumstances. The QSLs would not be printed until the group returned home and it is anticipated that QSLing would have begun by the time you read this note.

Einar, Kaare and their associates took enormous risks in providing the world's DXers with another first and the expense bill was horrific, probably more so than the conditions that they worked under with the temperature hovering around the zero degree mark, so please take this into account when you send off for your card to LA6VM.

MARKET REEF

This popular place for DXpeditions will be blessed with another party that will operate all bands on CW and SSB, with a possibility of RTTY from June 25 until July 2.

LIBERIA

To commemorate the 25th Anniversary of the Liberian Amateur Radio Association's assistance to the hobby in that country, the authorities, as well as issuing the special prefix, 5L, will also issue a special stamp to mark the occasion, and are allowing other events to be held, including the special suffix of BSJ for JOTA 1987. Congratulations to the Liberia Amateur Radio Association and please point your antennas down to VK land.

NON-AGREEMENT

Letters from a couple of amateurs do not agree with the remarks made by Jim VK3YJ, about nets. The writers concur that they are not against nets, but stress that any amateur with an ordinary dipole or simple antenna, can work the DX with very little effort on low power. It can be done and the answer, in one word is, "CW! I !"

THIRTY METRE BAND

Has any amateur worked 100 stations on 10.100 MHz yet? Well, it has been brought to my attention that one OT, has made the grade. I feel OT is the wrong terminology in this case as the perseverance needed to obtain that century, one would have to be very tenacious, patient, understanding and able to place quite a signal in the right direction.

One amateur has achieved this. It is none other than Fred VK4RF, from the "Sunshine State" and included in his score are 10 USSR countries and the mouth-watering prefixes of J26, J78, TK6, 5T5, 9H1 and 9Q7, to name a few.

Thirty metres is not a DXCC band but I believe that Fred deserves recognition for such perseverance and considering that he has held that call sign for over half a century, in my opinion speaks for itself.

Over to you Ken VK5KH. How can fellow amateurs acknowledge the work that this gentleman has done to publicise one of the acquired WARC bands, that our institute fought so hard for? To the gentlemen that acquired these bands for our enjoyment, take heart, they are being used, and in a very sensible fashion.

MOUNT ATHOS

I am sitting on a "hornets" nest with this one. Have you really worked a legitimate Mount Athos station? It appears that the current Mount Athos inquiry has many implications. Some of these reflect on previous operations, unfortunately. No one is going to like what I am about to put into print, especially those that have received credit for it, including myself. To the DXCC desk in Newington, to Ken VK5KH and other DXCC custodians, if there is any doubt as to the bonafides of any operation that has been claimed in good faith by an amateur for a new country, please delete ALL previous doubtful operations from the unlucky ones, and start again. But please do not penalise the legitimate operations that were condoned by the Monks and there were quite a few of these, until one particular operation unfortunately changed the Monks thinking on the hobby, we so much enjoy. Amateur radio is a sport or hobby and any accolades or comparisons should be based on a legitimate operation.

RTTY ENTHUSIASTS

Maybe a new country for all the RTTY enthusiasts? Phil VK2BPC, will be QRV from VK9 Norfolk Island, as from the end of last month for an indefinite period. Phil, will be using a newly allocated VK9 prefix on the preferred RTTY frequencies, particularly 20 metres. Phil also hopes to operate on 40, 80 and 160 metres as times and conditions permit. Norfolk Island is not new to Phil, and we hope to hear a lot from him.

NEW QSL MANAGER

Any station that worked 8R1X, in the 1986 CQWW Contest, or has recently worked 8R1Z or TA2C and requires a card, Carol WI4K, their new manager will oblige. Carol's new address is Carol Shrader WI4K, PO Box 5814, Virginia Beach, VA 234655. USA. The current call book address is obsolete.

QUOTABLE QUOTES

Lee KH6BZF, has more humour than a Dad and Dave comic. Some can be reproduced, others can't for certain reasons and the law in this country.

Some of Lee's latest efforts are -

. .If everything seems to be coming your way. . you are probably in the wrong lane! !

. . To be sure that your money is safe. .hide it in an empty beer bottle on your lawn no one will pick it up. (Sorry to disillusion you Lee, but in VK they will remove anything! VK3AH)

. . .Projects progress quickly until they become 90 percent complete, then they remain at 90 percent complete forever — it is called the transitional operations and maintenance period (TOM) period. (No comment at this QTH).

. Everyone relies on committees, because if more than one person is responsible for a miscalculation, no one will be at fault. (How true. VK3AH).

USSR LOSS

Unfortunately, the USSR lost one of their Antarctic

bases according to media reports. Fortunately it was unmanned and not in use at the time and no lives were lost. The area that went that-a-way was 400 by 600 kilometres. The base will be re-established and one of the amateurs in the reconstruction group is well-known DXer, Slava UA1JJ who will probably use the call 4K1J.

LOW BAND ACTIVITY

George VE3FXT, hopes to be QRV on 160 metres at the beg nn ng of this month. This will be the first time the 160 band has been activated from A22. Good luck to the low band enthusiasts.

BIG SIGNALS

Ph l VS6CT, is moving QTH. This time to a 20 story apartment building with a shack on the roof-top. Wel Phil, you always have the knack of making yourse f heard and a beam on top of that building w ll assist. Hope to hear you soon with all the ti-bits and organisation you are doing.

SAO TOME

Luis is stil very active, and it is trusted he will look for the multitude of VKs and ZLs that are after his valuable card in confirmation of a contact. He has been heard, scheds have been set up, but no contact. Never despair as propagation may come good and he w l be 6 x 9+, with no other stations call ng him, giving the VKs a chance.

THE GLOBETROTTERS

My favourite name for the DXing Colvins who real y get amongst it and in my book are true-blue amateurs. In 17 days operating from the Comoros as D68QL, they notched up some 9000 contacts from 152 countries and operating as S79KG, they estab shed 130 different countries with 9000 contacts. Who said that propagation was bad? We all know that the sunspot cycle is not in our favour but the stations are there and as I have said before a special or unusual prefix is worth a kilowatt or two and at least five 'S' points. As someone said — it is all in the mind.

Iris and Lloyd hoped to make Kenya their next stop and operate if they could obtain a licence. All QSLs for Ir s and Lloyd's operations to the Yaame Foundation.

LORD HOWE ISLAND

Rudi VK9LM, s expected to be operational from the island again. It is hoped that he has not got to visit Ken VK9LK, in a professional capacity this time. Ken who is the local medico is kept busy repairing the tourists mishaps of falling off bicycles and is seldom called upon by the seriousness of what happened to Rudi, necessitating an RAAF airlift to a mainland hospital during his last vis t to the s and.

SAN MARINO

A number of T7 stations have been active on 80 metres. It is not clear as yet whether they have permission to operate on 160 metres.

FOR SALE

A prime piece of estate has had the FOR SALE sign placed upon it. It is uninhabited, except for winged birds and a few rodents, and is 1600 kilometres south of Hawaii. By now you have established that I am not trying to gain a free advertisement for my QTH. The island of Palmyra has been put up for sale by the Fullard-Leo family, who have had ownership and control for some 60 years. There are beautiful coconut palms, a water catchment and storage equipment, a disused and practica ly useless 1600 metre airstrip, which could be updated.

With all the media takeovers in this country of late, surely one of the mega-magnates could afford a luxurious hideaway allowing only amateurs to visit for an occasional DXpedition. Personal feelings are that an oriental consortium will purchase the prime piece of estate, and turn the area nto a resort that will leave "Fantasy Island" to be considered as only a daydream. There must be some lucky people somewhere!

NICARAGUAN CALL AREAS

It appears there could be some changes in the structure of this country's prefixes. According to overseas publications YN1 becomes YN3, YN2·YN4, YN3·YN2, YN4·YN7/YN8, YN5·YN4, YN6·YN2, YN7·YN4, YN8·YN1 and YN9·YN5/YN6. If it is true, it is going to be very confusing for all and sundry.

LUXEMBOURG

During this year, LX stations will be appending /50 to their suffix, such as LX1AA/50. This is to commemorate the 50th anniversary of the Luxembourg Amateur Radio Society. The club station will sign LX50RL, which will be a must for prefix hunters.

SPECIAL EVENT STATIONS

The USSR, over the past few years, have had quite a few special event stations. If you have not received a card, the following may be of some assistance to you. Alexander Rubtsov is handling the QSL arrangements for the following special event stations —

UJ50A-1972, 4J50R-1974, R8D-1974, UJ30OU-1975, UK8JBD/U8R-1982, UK8XBD/U8K-1982, RJ8WCY-1983, RJ6R-1984, RJ5K-1984, EU9J-1985 and EK8R.

Now your problems start with how do you recompense Alexander for forwarding the cards back to you. Please, under no circumstances, send any money of any denomination, photographs or anything else but the cards you require, as this can cause the recipient considerable trouble. It is thought that you could send a self addressed envelope, with IRCs, and some mint and used postage stamps to Alexander Rubtsov, PO Box 1102, Dushanbe 734032, Tadzhik SSR, USSR.

IRCs are not recognised in the USSR, but they may assist Alex in sending for awards and other cards he may want. Good luck, but please be careful.

BITS AND PIECES

The credentials of **Herbert 5A0A** have been accepted by the ARRL, yet he is still getting very few takers, even after he calls CQ! ** **Pete WSTP** was QRV from the **Cayman Islands as ZF2KD** in February. ** **RA4HA** will resume his net on 14.175 MHz this month. ** **TV6CNA** was a special call to commemorate the **70th Anniversary** of the **WWI Battle of Vimy.** ** **9K2YA/IC5** was a special call for the **Fifth Islamic Conference** held in **Kuwait.** ** **George VE3FXT** hoped to be active from **Swaziland (3D6)** on **160 metres** last month. ** **Joe W3HNK** can get cards for QSOs with **UZ1PWA** in the **Arctic Circle,** but he is NOT the QSL Manager for any USSR station. If you want a card from a special USSR station, write to Joe, enclosing adequate funds and if he can, he will oblige. ** **HV3SJ** (generally termed "strawberry jam") has been quite QRV of late on 20 metres. ** **YU3KI** is signing **9Q5KI** and hopes to be active on 160 metres before he leaves probably at the end of July. ** The prefix of **H20** could have been used from **Cyprus last** month. ** There is a rumour that **well-known DXer Rudi F5RV,** became a Silent Key recently. I trust the rumour is incorrect and that the French readers of this column can deny the stories going around the bands. If it is true, it will be a very sad loss to the hobby.

NEW QSL MANAGER

Mary Ann WA3HUP, has taken on the duties of doing the QSLing for Khalid A61AB. Khalid hopes to improve his antenna system and obtain a linear in the near future. With Mary Ann doing his paperwork, he will not have a worry that no one will receive his cards and will be able to spend more time on air.

ANDAMAN AND NICOBAR ISLANDS

VU4APR/RBI commenced operations on February 20, with Bharathi VU2APR, doing an excellent job handling the pile up for this much wanted area and to the best of my knowledge, the first YL to operate from these islands. All QSLs to VU2APR, either via the bureau or direct.

PLEASE NOTE: It is an offence for Indian nationals to receive money as donations from international areas. This includes "Green Stamps", so please only IRCs for that much wanted card.

A lot of credit for the expedition must go to Bharathi for her personal representations to Rajiv VU2RG, Prime Minister of India. Bharithi pointed out to Rajiv the importance of the DXpedition and as it had been cleared by both the Ministrys' of Defence and Communications, release of the promised government assistance for NIAR's 20 member team would be appreciated. Rajiv, gave the final approval for the DXpedition to proceed.

Incidently Bharathi, passed her Grade 1 licence examination in December. Congratulations Bharathi from the DX fraternity.

CUSTOMS DUTY

Indian amateurs have had the imported Customs Duty exemption on wireless apparatus, accessories and components, extended until December 31, 1987.

HOSPITALISED

Late news is that Iris W6QL, accidently fell, whilst in the Maldives and broke her hip. She was flown out to a hospital in Colombo, where she underwent surgery to have it pinned. It is believed that her progress is quite good and she is in such good spirits, that Lloyd and Iris will continue their trip, when she recuperates.

Every good wish Iris, from your friends in Australia.

ST PETER AND ST PAUL'S ROCKS

At deadline time for these notes, it was anticipated that this country would be active towards the end of February. Ronaldo PY1BVY, hoped to be in the CW team.

Ronaldo PY1BVY, in his "second shack" at Friburgo.

WORKED ON THE WEST COAST

160 METRES CW

4X4NJ, 8Q7CH, DK6AS, DL1YD, G3MX, JAs, K0DO, K6HNZ, KM1H, KG6DX, KH6CC, KH9AC, KM1H, KP4AM, ON4UN, P29PR, RA9YG, SM7BIC, UA9MS, UA9UZC, VE1Z, VK9YS, VS6DO, W0ZV, W9AZ and ZS5LB.

40 METRES CW

3B8CF, 5B4FN, 8P9DX, 8Q7CH, 9Q5KI, BV2FA, CE0ZIG, CE2LZS, CM2QN, CO2LA, EA8N, EA5YU/EA8, EA88EX, EA9KD, FM5ES, FK0AT/FW, IS0LDT, KC6R, KP2J, KX6DS, LX1BJ, PZ1DV, RZ1OWA*, TA1C, TA4A, UA1OO*, UA1OT*, UD6DZ, UG6GM, UH8BBQ, VE2EDK (Zone 2), VS6UN, N8RA/V44, WP4D, XE2AH and XF4DX.

20 METRES CW

5B4SA, 5Z4BP, 5N4BP, 5N4BFD, 6Y5JH, 9H1EU, 9X5SP, CM2HR, CM6D, CO7KR, CT3DL, CT3DZ, HK1HHK, HK0HEU, HP3FL, KH9AC, KP9AM, KP4FI, KP4WI, S79LJ, TA1E, TI5FBP, TZ6VV, UF6VR, UO5GQ and VP9JY.

20 METRES CW

3Y1EE and 5A0A.

HEARD AND WORKED ON THE EAST COAST (SSB & CW)

Good reports on all bands from all continents, including some nice six metre openings.

*NOTE * denotes Franz Josef Land*

THANKS

Sincere thanks to the Editors of weekly, bi-weekly and monthly publications such as: *ARRL Newsletter, BARG' CQ-QSO, The DX Family Foundation Newsletter, Inside DX, KH6BZF Reports, Long Island DX Bulletin, NIAR News Letter, Papakura Radio Club Bulletin, RSGB DX News, QRZ DX, RSGB DX News* and *The W6GO/K6HHD QSL Manager List.*

Magazines including *Break In, cqDX, DX Post, JA CQ, JARL News, KARL News, Meteorological News, QST, Police Life, RadCom, Veron, Weather News* and *Worldradio*, to mention but a few.

Individual contributors this month include VKs, 2PS, 2BPT, 3YJ, 3YL, 3DYL, 4RF, 8NE, L30042, WI4K, ON7WW and assistance from the staff of the Lilydale Municipal Library.

Sincere thanks to one and all and good DXing.

THE BEACON PAPER

Ron Henderson VK1RH
Peter Gamble VK3YRP
FTAC

At the 1986 Federal Convention the Federal Technical Advisory Comm.ttee was requested to produce a paper on beacons for the 1987 Convention. Over the past nine months, Tim Mills VK2ZTM, has published material in AR inviting submissions and comments on this subject. A number of comments have been received, including a very detailed submission from Eric Jamieson VK5LP. Research on past WIA policies has also been undertaken.

A paper by Roger Harrison, entitled "Beacon Manifesto" and published in his *6UP* magazine is also of interest as it contains comments on the philosophy of beacons and suggestions on the technical specifications for beacons.

The first draft of the "Beacon Paper" has now been completed, and is reproduced here for your information. By the time the convention comes around at the beginning of May, this paper will have been revised a number of times! It will also have added to it some appendices, which set out previous WIA policies, current band plans and relevant IARU material.

Finally, the paper will contain a number of recommendations for debate at the 1987 Convention. It is hoped that these will address such subjects as the future strategies for HF and VHF beacons and the associated band planning considerations. If you have any comments to make on the subject of beacons, please write as soon as possible to the Chairman, FTAC, c/o the Federal Office, so that your ideas can be taken into account in the final drafts of the paper.

AMATEUR RADIO BEACONS

Background

The Federal Council of the WIA has been concerned over the past few years about the un-co-ordinated growth of amateur radio beacons on both the HF and VHF/UHF amateur bands.

Matters raised at the 1985 Federal Convention guided the attitude of the WIA delegation at the IARU Region 3 Conference, in Auckland, November 1985. Further matters arising from that venue were considered at the 1986 Federal Convention giving rise to a motion directing FTAC to prepare a position paper on Amateur Radio Beacons for consideration by, and adoption if thought fit, at the 1987 Federal Convention.

Definitions

"Beacon station" means a station in the amateur service established on a fixed frequency for the purposes of radio propagation studies (DOC Draft Handbook)

"International Beacon Project" means a project planned to provide a time sharing world-wide beacon service on selected amateur HF bands. The project is co-ordinated by the IARU International Beacon Project Co-ordinator.

"Time Sharing Beacons" means a series of beacons established world-wide operating through time-sharing on the one designated frequency.

Purpose of Beacons

Amateur radio beacons provide a two-fold service; primarily they provide a reliable identified signal of about average amateur station EIRP to permit identification of propagation paths. Their secondary use is as a known frequency signal source for equipment calibration purposes as to frequency, sensitivity and location. This secondary usage assumes more importance as new amateur bands are "opened up" to popular operation.

DOC Regulations and Requirements

Proposed DOC regulations and requirements (4.13, 4.14 and 5.12) cover licence applications, unattended operation, transmitting conditions and modulation modes.

Policy Guidance

Policy guidance for amateur radio beacons comes from two sources, WIA policies made at Federal Conventions and IARU resolutions to which the WIA subscribes.

Extant WIA policies generally cover band planning, a desire that only authorised beacons be recognised and adoption of IARU beacon plans.

The current IARU policy is contained in Administrative Council Resolution concerning 28 MHz Beacons, adopted in Melbourne, November 1985 are also relevant.

The HF Requirement

The broad HF requirement is a series of beacons located about the world in all amateur bands which provide world-wide propagation on a regular basis to indicate when intercontinental propagation is possible.

Because of the frequency spectrum demands should each continent (or heaven forbid, each nation), demand a discrete beacon frequency and associated guard band, the IARU Administrative Council resolved to adopt a time sharing common frequency beacon plan modelled on the successful Northern California DX Foundation 14.1 MHz program. An added advantage of the time-shared beacon project is the capability of stepping the radiated power of each beacon by known decrements during its transmitting time period.

HF Band by Band Requirements

Taking the amateur HF bands in turn, there has been little interest expressed in 1.8 MHz band beacons, perhaps because the experimental nature of this band vis, via the communications employment made of the traditional DX bands.

Similarly, the limited amount of DX working on the 3.5 MHz band suggests beacons are not required at this stage on this band. This is not to decry the local value of pseudo beacons sending CW.

It is likely there will be a push to establish beacons in the 7 MHz band although one would have thought the current sunspot cycle low would have given that impetus. Extension of the IARU beacon project to this band could be anticipated, however international amateur frequency allocations may determine constraints.

Ten MHz is a narrow secondary service band, these factors will influence any beacon proposals as will the near universal decision by the amateur community to use only narrow band modes on the band.

Fourteen MHz was the first band being an international DX band to have time- sharing single frequency world-wide beacon service established therein. This project has allowed the scheme to be evaluated and the number and location of beacons to be determined. To date, there has been no adverse comment on these factors although the Administrative Council saw fit to provide for secondary regional shared beacon frequencies in their 28 MHz deliberations.

During their band planning, the Region 3 Conference, in Auckland, acknowledged that a time-sharing beacon project would come to 21 MHz in due course and consequently they allocated a beacon sub-band at 21.150 MHz. We should be prepared for this proposal and consider the need for regional secondary beacon frequencies.

Little practical beacon activity can be established in the two WARC 79 exclusive amateur bands at 18 and 24 MHz until these become genuinely exclusive in 1989. Nevertheless, the need for beacons can still be debated, for by then the time-sharing scheme will have had a reasonable trial on other DX bands.

The IARU Administrative Council resolution on the 28 MHz band set up a world-wide network on 28.200 MHz and regional networks encompassing a continent each at integral kilohertz between 28.190 and 28.199 MHz. Australia should bid to the IARU International Beacon Project Co-ordinator for a time slot on the world-wide network and a continental frequency for a regional network. The WIA will need to designate one of the existing beacons to become the world-wide network member and allocate time slots to the remaining existing beacons to establish our regional network. FTAC should be tasked with these actions at the '87 Convention.

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ARB

Listening Around

Joe Baker VK2BJX
Box 2121, Mildura, Vic. 3500

I have just recently returned from a trip to Melbourne. After 13 months at Buronga without a break, during which time Buronga began to grow on me — that old shut-in feeling — I welcomed the opportun ty to get away for a short visit.

I left Mildura by train on Sunday night, December 21, arriving at Spencer Street Station at 7 am the next morning. After booking into my motel I fell asleep with the intention of waking prior to dinner time, however it was just in time for tea when I awoke. (The *Vinelander* journey, stopping at every little whistle-stop station during the nine hour overnight trip, is very tiring!)

The following day, John VK3PBX, had arranged to pick me up at the motel and take me to his Sunbury QTH for a few hours, however, due to his work commitments, he was unable to do this and suggested that I might like to have a look around the dock-side area of Melbourne. As I don't know the area very well it is impossible to explain the streets we traversed but one of them came to a dead-end, right by the river-side. There was a factory of sorts, which straddled the road, with formidable looking gates and unfriendly-looking guards. So we did an about-turn and shortly the masts of *Polly Woodside* and the *Westgate Bridge* came into view. As it was late evening, there wasn't time for John to take me to see *Polly Woodside* at close quarters, so John asked if I had ever been across the *Westgate Bridge*, which was some distance in front of us.

We tried to find a road approach to the bridge, but as the area was unfamiliar to John we couldn't locate t and decided to make our way back towards the city.

As we proceeded along one road we soon saw, to our left, a small hill and the unmistakable shape of a satell te dish. As we rounded the hill we saw another smaller dish beside it and atop a nearby building what appeared to be several UHF antennas. We stopped by the roadside for closer inspection.

We clambered out of John's car and walked a short distance across a paddock towards a low-roofed building and the satellite dishes which were all surrounded by a strong wire fence, gates secured with padlocks and a notice stating that the installation was protected by a security firm. As the gate was open we entered, presented ourselves at the door of the building and introduced ourselves as two curious radio amateurs who would like a look at the installation.

The two technical officers on duty, Gary O'Donahoo and Marco Pantazi, were not radio amateurs but immediately volunteered to tell us as much as we wanted to know about the place.

Inside the bu lding was a large amounted of equipment associated with the dishes and video monitors everywhere. It is a pity that I did not have my tape recorder with me for the two were so helpful and I could have taken down more detail than I could w th my small note book.

However, we were told that both antennas work in the gigahertz range, their foundations are firmly set in concrete and they both work through the AUSSAT satellite. The larger one, 7·13 metres in diameter, is part of the HSV7 links with Sydney and elsewhere and the smaller one, 1·2 metres diameter, is used by AAP-Reuter, to link-up newspapers in Sydney, Adelaide, Brisbane and Perth (Sydney is the main control centre of this network).

The satellite in use for HSV7 is the A1 at 160 degrees longitude and the A2 at 156 degrees longitude, is the AAP one. When it is launched, the A3 will be at 164 degrees longitude making a separation of four degrees between each. We were told that there is a similar system of dishes at Highbury Road, Glen Waverley.

When I expressed regret at not having my camera with me, Gary produced a colour photograph which he said I could have to use in this article which I proposed to write for AR. John was out of luck as there was only one photograph!

Gary explained that he had relatives in Mildura (O'Donahoo and Harris, who are in business in Mildura) but I do not know them personally. Gary said he expects to be visiting Mildura soon to install satellite equipment on the roof of a Mildura newspaper – all part of the AAP-Reuter set-up we were looking at.

Although John and I stumbled upon this installation by accident, it was well worth looking at it and for others who would also like to see it, you will find it at Lot 7, Todd Road, Port Melbourne.

Gary said that others who might like to find out more about the installation should contact the Victorian State Manager for AAP, David Blanks. David is the Public Relations Officer for AAP and his address is in the Melbourne Telephone Book.

A few months before my visit to Melbourne, I had been speaking with Ron Fisher VK3OM, who works in the Control Room of the ABC, Lonsdale Street, Melbourne and is the Equipment Reviewer for AR. Ron was kind enough to say; "call me up when you are next in Melbourne, and I'll show you what I do on the job" (or words to that effect). So, the day after the Port Melbourne trip I gave Ron a ring at his work-place.

Upon finding the ABC building, I presented myself to the receptionist and asked for Ron. She picked up a phone and within minutes Ron emerged up some stairs from an installation which appeared to be beneath the footpath in front of the building. However, undaunted I followed Ron down under the footpath into what appeared like Thomas Edison's Menlow Park Laboratory. Although this was not a laboratory (it only seemed like it), it was an enormous switching installation with rack and panel equipment and patch- cords connected everywhere — it also resembled the inside of a manual telephone exchange. From this switching centre all ABC stations can be linked together.

Whilst I was there, the *Country Hour* was on-air and the many stations on the hook-up were indicated by scores of red indicators on a panel. Stan Edwards, Ron's off-sider, was on duty at the time while Ron attempted to explain the functions of all the equipment to me. Ron and Stan are the *master control operators* in charge of this system, which also involves ABC satellite links to other State capitals. In fact, while I was there, I heard a voice, via the satellite link from Sydney, telling Melbourne to get their tapes rolling to take a trailer for an ABC science show. I also heard Adelaide talking to Stan about another matter of programming.

The satellite voices came through very clearly indeed.

Ron said that the ABC's satellites are well used and they are rapidly replacing the phased-out land-line relays. Even so, satellite links are not trouble-free. For example, in adverse weather conditions the satellite signals cannot penetrate rain drops.

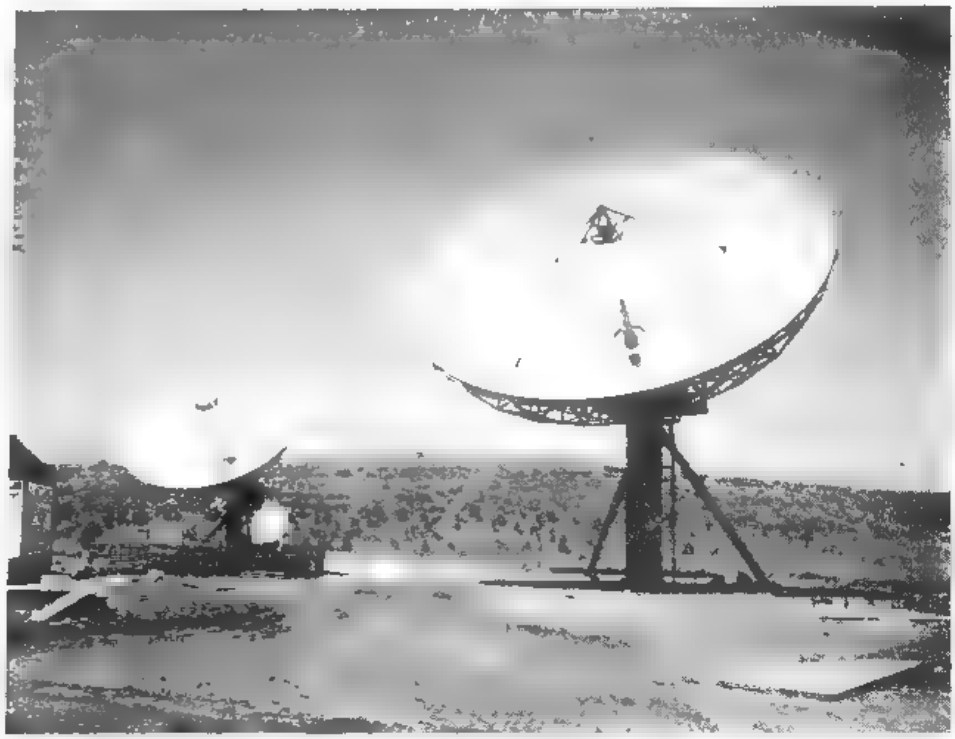
I reminded Ron that the ABC was still using a 49 metre transmitter at Lyndhurst to relay the ABC to the outback. Ron explained that the ABC was using, or was about to use, high-powered transmitters in Central Austral a which would transmit their programs from capital cities by satellite, it was only a matter of time before the Lyndhurst Shortwave Relay site would become obsolete.

The "boys" at this ABC installation made me very welcome and my two and a half hour stay with them very enjoyable. It is not the r fault that my description of the job they do is by no means a *full cover story*. Perhaps the next time I visit them I will have my tape recorder with me.

Since returning from Melbourne and my visit to the ABC, I have been invited to visit the Adelaide installation by Graeme VK5JD, at Rosstrevor. Graeme does a similar job with the ABC in Adelaide.

Being a amateur radio operator opens many doors as they say!

ar



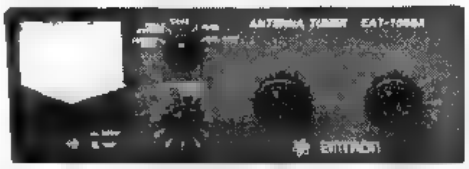
The satellite dish installation in Port Melbourne.

SYDNEY — MELBOURNE — BRISBANE

NEW

1000 WATT TUNER
EAT — 1000A

YOU HAVE ASKED FOR IT — WE HAVE MADE IT!



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EMTRON'S fastest selling 300 watt antenna tuner with SWR meter, built-in 1 4 balun, heavy duty ceramic switch and top grade components Works with all rigs and is found in Amateur, Commercial and Marine services

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Antenna Tuner & Low Noise Amplifier For Receivers!

ETP 1 will match your antenna to your receiver for maximum signal from MW to SW It utilizes a low noise 12dB gen preamplifier to boost weak signals Special spring loaded long wire terminals as well as SO239 connectors make ETP-1 the most versatile tuner/amplifier on the market

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Yes this new from EMTRON — highly accurate CROSS-NEEDLE SWR & POWER meter model EP 200 with a freq range from 1 8 MHz to 60 MHz and two power ranges 20, 200 watts. gives instantaneous readings of forward/reverse power and SWR

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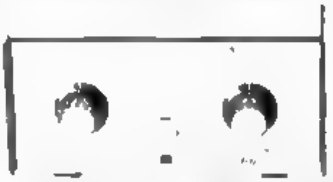

Professionally made noise bridge for all kinds of RF measurements antena adj etc

NOISE BRIDGE with EXPANDER EBN-2 $129 & $10 P&P

EMTRON'S NEW HF SWR METER EP-1

Specially designed with PRICE QUALITY AND ECONOMY IN MIND Freq range from 3 50 MHz Reads forward and reflected relative power ideally suited for amateur and CB services

$49 & $5 P&P

NEW from EMTRON EAA230 active antenna a SWL delight

Specially designed for SWL Based on the famous DRESSLER DESIGN the unique electronic circuitry gives to receiver a perfect impedance match from 100kHz to 30MHz A 12 dB low noise pre amplifier gives weak signals a boost comes complete with 240v AC 12V DL supply and 10M of coax

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FAX: (02) 281 1506

VICTORIA:
288-294 Queen St, Melbourne
Vic. 3000.
Entrance from Lt. Lonsdale St.)
Ph: (03) 67 8551 or 670 0330
FAX: (03) 670 0671

QUEENSLAND:
418 Logan Road, Stones Corner
Qld. 4120.
Ph: (07) 394 2555
FAX: (07) 349 4316

1986 VK/ZL/OCEANIA DX CONTEST

Jock White ZL2GX
152 Lytton Road, Gisborne, New Zealand

VK AND ZL INDIVIDUAL BAND SCORES

	PHONE		CW		PHONE		CW	
OPEN								
VI5SJ	658080	VK2APK	715068	ZL1AIZ	221550	ZL1AIZ	406192	
VK2KL	396093	VK4XA	602095	ZL1AXB	174984	ZL2SQ	390370	
VK5QX	210687	VK2AYD	384132	ZL1AAS	59580	ZL2AGY	325140	
160 METRES								
VK3BEE	12600	VK3BEE	9860	ZL1AIZ	1540	ZL1AIZ	1400	
VK2PS	5280	VK3CGG	1600	ZL1MQ	1080	ZL1MQ	700	
VK2BQS	900	VK2PS	1200	—	—	ZL1BGT	40	
VK2DPY	900	—	—	—	—	ZL1BGT	40	
80 METRES								
VI5SJ	39260	VK3XB	39780	ZL3KR	29750	ZL1AIH	75240	
VK5QX	4700	VK2APK	39200	ZL1BVK	13770	ZL3KR	70110	
VK2PS	2430	VK5GZ	7920	ZL2AFY	11760	ZL1AIZ	27060	
40 METRES								
VK2EKY	103050	VK2EKY	290460	ZL1AIZ	83160	ZL2SQ	390370	
VK2KL	42840	VK2APK	213200	ZL1AGO	55680	ZL2AGY	325240	
VK5QX	28090	VK2AYD	123200	ZL2ALF	2400	ZL1AIZ	110175	
20 METRES								
VK4PJ	27398	VK2APK	17568	ZL1AXB	174984	ZL3AGI	10220	
VK5QX	24090	VK4XA	13746	ZL1IM	1715	ZL1BSG	4785	
VK2KL	15190	VK3KS	9840	ZL1MQ	1500	ZL1AIZ	2948	
15 METRES								
VK2PS	14632	VK4XA	21320	ZL1AAS	59580	ZL1BGT	2842	
VI5SJ	14062	VK2AYD	7462	ZL1IM	14520	ZL1BSG	1824	
VK2KL	14022	VK3CGG	6348	ZL1MQ	4440	ZL1MQ	1240	
10 METRES								
VK4AQD	4956	VK4XA	2100	ZL1IM	1296	—	—	
VK2KL	1488	VK2BQQ	27	ZL2ALF	252	—	—	
VK2PS	1200	—	—	ZL1MQ	9	—	—	

ZL PHONE

CALL	160	80	40	20	15	10	TOTAL
ZL1AIZ	1540	8360	83160	450	48	—	221550
ZL1AXB	—	—	174984	—	—	—	174984
ZL1AAS	—	—	—	—	59580	—	59580
ZL1AGO	—	—	55680	—	—	—	55680
ZL1MQ	1080	—	1800	1500	4440	9	43146
ZL1IM	—	2420	1105	1715	14520	1296	21056
ZL1BVK	—	13770	—	210	—	—	13980
ZL2AFY	—	11760	—	—	—	—	11760
ZL2ALF	—	—	2400	216	216	252	9984
ZL2BDC	—	—	—	—	1120	—	1120
ZL2IG	—	10	—	144	280	—	1080
ZL3KR	—	29750	—	—	—	—	29750
ZL3HT	—	2790	350	16	—	—	7280
ZL CW							
ZL1AIZ	1400	27060	110175	2848	98	—	406192
ZL1AIH	—	75240	—	—	—	—	75240
ZL1BSG	—	660	5510	4785	1824	—	52782
ZL1BGT	40	3740	4340	80	2842	—	48511
ZL1MQ	700	1440	2500	1472	1240	—	45838
ZL1HV	—	2160	5480	2822	—	—	37800
ZL2SQ	—	—	390370	—	—	—	390370
ZL2AGY	—	—	325240	—	—	—	325240
ZL3KR	—	70110	—	—	—	—	70110
ZL3AGI	—	—	—	10220	—	—	10220
ZL4QY	—	—	—	—	—	—	check
VK CW							
VK2APK	160	39200	213200	17568	5852	—	715068
VK2AYD	—	2200	123200	8400	7462	—	384132
VK2EKY	—	—	290460	—	—	—	290460
VK2BQQ	—	1600	116025	240	—	27	171570
VK2PS	1200	4610	—	6741	3132	—	86437
VK2DIO	—	4680	360	2898	2064	—	50414
VK2BQS	40	550	—	66	182	—	4117
VK2AIC	—	—	—	—	—	—	check
VK2CWS	—	—	—	—	—	—	check
VK3CGG	1600	5000	6825	1269	6348	—	140000
VK3AUQ	20	1840	11925	1575	6006	—	93696
VK3XB	—	39780	—	—	—	—	39780
VK3IM	—	1050	—	1560	3844	—	21376
VK3BEE	9860	—	—	—	—	—	9860
VK3KS	—	—	—	9840	—	—	9840
VK3DF	—	1140	—	528	64	—	7956
VK3CDP	—	3200	—	—	—	—	3200
VK3CGE	—	1800	—	—	—	—	1800
VK3AJG	—	—	—	—	—	—	check
VK4XA	600	5940	101760	13746	21320	2100	602095
VK4SF	—	—	22120	—	—	—	22120
VK4TT	—	—	—	2418	—	—	2418
VK4BKM	—	—	—	—	—	—	check
VK5GZ	—	7920	17500	750	1824	—	104832
VK5ADX	840	120	12390	6240	—	—	66326
VK5AGX	—	600	315	4482	4568	—	38200
VK5BS	—	—	5	588	—	—	726
VK7RY	—	200	45	418	84	—	4192
VK8BE	—	—	—	1600	—	—	1600
VK PHONE							
VK1LF	—	2070	—	192	2310	—	17064
VK2KL	580	320	42840	15190	14022	1488	396093
VK2PS	5280	2430	—	897	14632	1200	127568
VK2EKY	—	—	103050	—	—	—	103050
VK2BQS	900	1080	—	98	11016	—	44992
VK2DPY	900	450	1200	96	—	—	11946
VK2CWS	—	40	80	—	—	—	240
VK2AIC	—	—	—	—	—	—	check
VK3BM	—	300	175	910	2072	—	13056
VK3BEE	12600	—	—	—	—	—	12600
VK3CDP	—	840	440	384	600	—	11855
VK3VQ	—	—	—	—	—	—	check
VK3DB	—	—	—	—	—	—	check
VK4AQD	—	1050	45	713	9558	4956	62157
VK4PJ	—	—	—	27398	—	—	27398
VK4KWO	—	—	—	—	13570	—	13570
VK4KHZ	—	2340	—	—	—	—	2340
VK4BJD	—	2226	—	—	—	—	2226
VK4SF	—	—	—	651	—	—	651
VK4BKM	—	—	—	—	—	—	check
VK4QX	—	—	—	—	—	—	check
VI5SJ	—	39260	23900	1056	14062	—	658080
VK5QX	—	4700	28090	24090	—	—	210687
VK5QU	80	600	1020	1406	4680	—	35399
VK6RO	—	120	—	3285	8956	—	26414
VK8BE	—	—	—	437	—	—	437

THE CONTEST MANAGER SPEAKS. . .

It is hitting hard — the realisation that these are the last VK/ZL results for which I'll be responsible. My first association with this activity was some 50 years ago as a contestant while, for the past 40 or so, I have been an administrator (contestant too at times — and still great fun!). During this time, so many wonderful friendships have been formed in all continents — and with some — receipt of a log does much to rekindle happy memories of "contest battles" / correspondence / and general contest discussion. Just how many letters have been exchanged in an endeavour to overcome apparent weaknesses in rules could not be checked even with a wild guess. *But* this went on year after year and gratitude must be expressed to those who so readily co-operated.

Are the rules fulfilling all requirements? Of course not! In spite of professional training which told me attempts to achieve such a state would end in failure — the effort was made — over and over again. I doubt if the ideal set of rules will ever be achieved but the target is inspiring! The major point of achievement is to ensure that the rules are fair to all concerned and this has been an over-riding factor. I well recall a very close ZL friend (now deceased) whose ridicule because of alleged "loaded" rules was almost vitriolic! We were friends to the last. Such are the relationships associated with VK/ZL.

Comments have often been made about logs. As an "old contester", I hate the re-writing of logs and eventually avoided this by adequate preparation / a little care / and use of carbon paper. "Copy book" material is not expected by an administrator but it is essential that entries be clear and free from ambiguity — and carefully checked for dupes. Finally — the mathematics of scoring must make sense! Think about that.

I make a plea. ***Read the rules!*** This might sound strange but it is so often assumed that rules will be the same — as last year — as when last entered — as whenever! Words fail me on this. The thought of an athlete entering a marathon/triathlon, etc without checking rules "boggles the mind."

I make no excuses for being utterly forthright at times. I believe this is necessary and I have never appreciated weakness in leadership. Yes — negative criticism has hurt from time to time and hurt badly, but that is part of the game. Nothing could ever replace the friendships made — thanks fellas. I envy those carrying on. May your measure of enjoyment be bountiful.

From an oblique aspect, the 1986 contest could be considered a gigantic flop — but — with prevailing conditions — was it? Possibly more effort and more planning than usual was necessary. That much planning was done is evident — that much more should have been done is also evident! W thout doubt, the 12 hour duration (with one notable exception) was we l accepted I believe this is a good compromise in providing adequate compet tion wh le avoiding the marathon effect Scoring will always be debatab e but the basis of differential band scoring is the fairest system possible

Missing from these results is the call sign of WIA Life Member and long time contest enthusiast, L30042/BERS 195, Eric Trebilcock, whose friendship and helpful comment over many years has been most acceptable. I've already commented on logs, but a "final" one is necessary because of two others whose logs year after year — have always been a delight to handle — thank you VK4XA and VK3XB

73, ZL2GX

ar

NEWS FROM LONDON

RRD REPORT

The Radio Regulatory Division (now renamed Radiocommunications Division) of Britain's Department of Trade and Industry, issued its first ever annual report on December 18. Geoffrey Pattie, Minister of State for Industry and Information Technology, introduces it as part of the Division's efforts to improve openness and consultation. The change of name, he says, is intended to reflect a new approach, aimed at less regulation — a phrase suggesting heavy-handed bureaucracy — and more at a service to responsible

The report is for the financial year ended March 31, 1986, and fills 53 thick glossy pages. It is free this t me, but there is a suggestion that readers will have to pay up to £5 for the next report. It covers the whole range of the Division's activities of which amateur radio is, of course, only a part.

Traditionally, says the report, radio has been regulated in immense detail, but it is now becoming apparent that the spectrum can be safeguarded with fewer controls, provided there is vigorous enforcement of those which remain. The aims of radio regulation in the UK are to make radio more readily and widely available, and to eliminate licensing altogether where this can be done without damage to licensed use — for example it is proposed to exempt a wide range of low power devices.

Phase III of the DTI's Spectrum Pricing Study (which presumably includes amateur radio) was due for completion by the end of 1986. Phrases in the RRD report like *increasing pressure of demand* and *pricing (as a resource rationing mechanism)*, are alarming to the radio hobbyist. The government is to announce its views on the findings of the study at a later stage and amateurs, amongst others, will be anxiously waiting to hear them.

For amateurs, the report records three major events in the year under review — the allocation of 50 MHz, the decision to allow the RSGB to run the amateur Morse test, and the decision to allow Class B licensees to use Morse permanently on the VHF bands. Mention is also made that during 1985 agreements were concluded with the USA, Canada and the Falkland Islands to enable international greetings messages to be passed from Special Event Stations in time for Jamboree-on-the-Air that year. (But whatever happened to the proposed similar agreement with Australia? T S).

Regular meetings are held with the RSGB, says the report, at which a wide range of subjects are discussed. Particular topics covered during the year have included a strategy for dealing with interference to television and radio reception, crossband working, packet radio, licence revision and research permits.

Statistics show that, following the computerisation of licence records by the Post Office, acting as agents for the DTI, the issue of licences is now normally completed in five days. Prosecutions under the Wireless Telegraphy Act for illegal transmitting activities resulted in five convictions for unlicensed use of amateur bands, as opposed to 896 convictions for illegal CB operation, and 124 pirates convicted for broadcast band infringements.

As at March 31, 1986, there were 56 346 amateurs licences on issue (Class A, all bands — 28 750; Class B, VHF/UHF only — 27 341; Beacons — 42; Repeaters — 213). The total income from these licences was £700 000 and since 1970, increases in licence fees have been more or less kept in step with the retail price index.

During the year, 290 173 licences were issued to all users of the radio spectrum, and these permitted a further (approximate) 900 000 mobile stations to operate. Viewed in this context, the hobby activity of amateur radio must be rather small fry in the eyes of the powers-that-be. To this reporter, at least, the RRD report serves to stress how important it is to amateur radio, ***everywhere***, to have effective representation of its interests at official levels by authorative, responsible, and respected, national societies having the support of ***all*** users of the amateur bands.

RE-ISSUE OF PRE-1958 G-LICENCES

The DTI has announced a change n policy regarding the re-issue of lapsed amateur radio licences with their original call signs. It has decided to permit previously held licences to be re-issued to the original holders — even when the original qualifications were not based on the current Radio Amateur Examination Syllabus. This announcement follows on from the concession announced last June which extended the validity of the amateur Morse test for life, th s bringing its validity into line with the RAE. The only anomaly left, therefore, was the question of the pre-1958 lapsed licences, and after representations from the RSGB and the consideration of several individual cases the Department decided to bring this into line also.

Licences with call signs in the G5 plus three letters series cannot, however, be re-issued with their original calls as this series was recently withdrawn and holders issued w th new call signs.

The onus is on applicants to prove that they previously held a licence/particular call and to provide proof of identity. The way is now open for a number of old-timers to find their way back onto the bands after a long absence.

RRD REPORT (Follow-up to above report)

Radio Communication January 1987 reports that as it was going to press, the management consultancy, CSP International, was due to present its final report to the DTI on "spectrum pricing." It is understood by the RSGB that the report proposes that the government should relinquish detailed control of most of the radio spectrum not used by the military to ndependent Spectrum Management Licensees (SMLs). Each SML would control a block of radio frequencies and "sell" them to users.

It appears that amateur radio wil not be subject to these arrangements however. According to the RSGB's source, amateur radio was thought to fall well outside the possible terms of reference of the new recommendations and no proposals were formulated.

—From AR's London Correspondent, Tony Smith G4FAI

ar

ATV GROUP FOR LAUNCESTON

A meeting of amateurs held recently in Launceston saw the formation of the Northern Tasmanian ATV Group.

Five amateurs attended the meeting and seven others registered their interest prior to the meeting.

Further meetings are planned for the third Saturday each month.

Some of the aims and objects of the Group are:

- Further promote interest and activity in amateur radio.
- Provide a forum for discussion, instruction and training in amateur radio.
- Conduct educational and instructional broadcasts.
- Encourage outdoor activities for persons with video cameras.
- Provide assistance to organisations and individuals requiring video taping.
- Conduct ATV broadcasts on a regular basis.

If you live in the northern part of Tasmania and are interested in amateur television, whether Slow-Scan or Fast-Scan, or merely interested in the mode, perhaps you would like to be part of the group. If so, contact Bob VK7NRR, ex-VK7NAI, for further information. Registration forms are available from Bob on request or at the monthly meetings of the Northern Branch of the WIA.

—Contributed by Bob Richards VK7NRR

ar

SUNSHINE COAST AMATEUR RADIO CLUB

The following office bearers were elected at the Annual General Meeting of the Sunshine Coast ARC on February 4, 1987.

President Paul Dunlop VK4BPD
Secretary Joe Ellis VK4AGL
Treasurer Kevin Oakhill VK4NKO
Committee Geoff Sanders VK4NEL
Jeremy Smith VK4ZCC

Amateurs interested in joining the Sunshine Coast Amateur Radio Club should write to the Secretary, PO Box 80, Nambour, Qld. 4560, phone (071) 41 2315 for more information.

—Contributed by Joe Ellis VK4AGL, Secretary, SCARC

ar

Club Corner

Contests

Ian Hunt VK5QX
FEDERAL CONTEST MANAGER
Box 1234, GPO, Adelaide, SA. 5001

CONTEST CALENDAR

APRIL

4 — 5 IBM QSO Party
8 — 10 DX YL to North America YL CW
11 — 12 CARF Commonwealth Phone
15 — 17 DX YL to North America YL SSB
25 — 26 Swiss "Helvetia" Contest

MAY

2 Utah QSO Party
9 Nevada QSO Party
30 — 31 CW WW WPX CW Contest

Around this time we have a break in local WIA sponsored contests, however do not forget that the next of these events will be the *VK Novice Contest* to be held in June. I would hope that the high levels of atmospheric noise on the 80 metre band may have reduced by then

CW WW WPX CW CONTEST

Rules for the CQ World Wide WPX Contest were not available for printing in the March issue and the SSB section of that contest is now past. The CW section is as listed above. I now have a little more information which may be of interest to you.

The rules are the same as were used last year and are, in fact, unchanged from the format used for many years past. Following are a few points to keep in mind.

Only 30 hours out of the 48 hour contest period may be used by single operator stations. Off times can be taken in up to five periods, but off periods must be a minimum of 60 minutes in length. Multi-stations can operate the full 48 hours.

The QRP section has become very popular and is worth your attention.

The definition of the prefix multiplier is spelled out in detail and is not to be confused with the interpretation used by the CQ WPX Award program

A prefix is the two-or-three-letter/number combination which forms the first part of the call sign.

Also, bear in mind that stations in call areas different to that indicated by their call signs are required to sign portable.

The multiplier is determined by the number of different prefixes worked and is counted once only, regardless of how many times it is worked on other bands.

Another point to keep in mind is that, in the multi-operator, single transmitter category, only one transmitter and only one band may be used during the same 10 minute period. Picking up a new multiplier on another band during the same period is definitely prohibited

An alphabetical/numerical check list of claimed prefixes is a requirement and must be included with your log

An updated trophy and plaque awards list now shows over 40 awards in existence for this contest.

Deadline for submitting your SSB entry is May 10 and for the CW section, July 10. Be sure to indicate SSB or CW on the envelope.

All logs go to: WPX Contest, 76 North Broadway, Hicksville, NY, USA. 11801.

UBA SWL TROPHY

Information had not come to hand regarding this contest in time for publication in the March issue. The SSB section was timed for March 28- 29. You should, however, be able to catch the CW section on May 23-24. Time of the contest is from 0000 Saturday to 2400 UTC Sunday.

This SWL activity will be held annually on the last weekends of March and May, and replaces the UBA Cup Competition held in January and February.

Only six hours may be used out of the 48 hour contest period, three continuous hours on Saturday and the other three hours on Sunday.

BANDS: 3.5 to 28 MHz (no WARC bands).
LOGS. To be in columns as follows: Date/Time in UTC; Station Heard, RS(T) by the SWL; Station Worked; Points and Multiplier. *Station Heard* may be logged only once per band. (No CQ, QRZ, etc). If points are claimed for both stations in QSO the call of each must appear in the *Station Heard* column. Call of *Station Worked* may not appear more than 10 times on each band.

There is a penalty of three times the value of the *Station Heard* for duplicating logging, one point [illegible]

POINTS: Stations in SWL's own continent — one point. Stations outside own continent — two points.
MULTIPLIER: Each different prefix heard on each band.
FINAL SCORE: Total points from all bands, times the total prefixes on all bands.
AWARDS: Certificates to the top five and the first in each country with a reasonable score. Also, the top YL and multi-station.

Include a summary sheet showing the scoring, alphabetical list of prefixes on each band, and the usual signed declaration that the rules and regulations have been observed with your entry.

Entries must be postmarked no later than four weeks after the end of each contest. They go to: Marc Domen, ONL 6945, Gebrm Blommestraat 14, B-2200, Antwerpen (Borgerhout), Belgium.

ROSS HULL VHF/UHF MEMORIAL CONTEST 1986 — Results

THE ROSS HULL TROPHY STAYS IN VK3

Congratulations go to Les VK3ZBJ, on yet another effort to come out as top scorer in this contest. I had the pleasure of a short visit from Les when he was in Adelaide during last year to watch the Adelaide Grand Prix. Needless to say the Ross Hull Contest was one of our main topics of conversation. It certainly seems that Les has the game sewn up as far as VHF is concerned. I know that he has always been very keen on anything to do with the higher frequencies for many years. Les has also made his contribution in other ways with the many articles he has had published in the past. So, once again Les, our heartiest congratulations. Maybe you could write an article for *Amateur Radio* describing some of your VHF experiences. I am sure that it would make very interesting reading to many and not just VHFers either.

Results of the contest, listed in order of call area are:

CALL SIGN (VK)	7 DAY (Points)	2 DAY (Points)
2YVU*	212	77
2AAK	169	77
2TR	18	18
2BQS	18	6
2XCI	5	5
2BY	Check Log	Check Log
NATIONAL WINNER		
3ZBJ*	1970	529
TWO DAY CERTIFICATE WINNER		
3AUU	835	333*
3AUG	674	—
3YRP	614	202
3VF	401	179
3ZXY	364	145
4TKA*	156	25
4FXZ	105	77
4FXZ/7	25	14
5NC*	1128	395
5LP	592	216
5AAS	—	4
6ZLX*	647	319

* indicates certificate winner

You will see that there were only 19 logs submitted for the Ross Hull Contest. This is a very disappointing result, particularly when you consider the very wide publicity the contest received both in my column and the VHF/UHF column, written by Eric VK5LP As well as information and encouragement appearing in these columns, other publicity was provided both by discussion and the written word in various ways.

I firmly believe that there is not enough real interest in this contest to warrant it continuing in its present form and, unless I am convinced otherwise between now and the Federal Convention, my report to the Federal Council will contain opinion to that effect.

It is not enough that "lip service" be paid. I have endeavoured for several years now to try and bring some life back into the Ross Hull Contest, all to no avail

I would suggest that it is pretty pointless for the WIA Federal Contest Manager to have to organise and run a **national** contest when there is so obviously practically no demand for same.

Let me provide the following evidence.

Only one Division has had either the courtesy, or interest, to reply to the discussion paper I sent to all Divisions concerning the matter of *VHF/UHF Aspects of Contests*, that was sent out in late May [illegible]

I published a copy of the same discussion paper in the August 1986 issue of the magazine. There has been no more than two letters received on the subject by me.

The measure of interest in a contest can only be determined by the number of entries received by the contest manager.

The total of 19 entries in the 1986 contest can be considered as a measure of interest on the following basis:

There are 2960 Limited Licensees in Australia. These, one would expect, to be interested mainly in VHF. There are 1169 operators with Combined (Limited/Novice) Licenses. That makes a total of 4129.

If you assumed that just 20 percent of Full Call operators had some VHF equipment capable of operating (and I would believe the percentage in this category to actually be much larger), the figure here would be 1648. Thus, the Grand Total of operators in Australia with VHF capability would be 5977

The figure of 19 operators entering the contest represents 0.32 percent of the total figure quoted.

Would you think that a contest would be worthwhile running under these conditions? ? ?

Over to You!

A number of the 19 contestants in the Ross Hull Contest remarked in their letters that they were entering with the intention to try and show that there is interest in the contest. I appreciate their interest, however they were certainly not backed up by the majority.

I again refer you to my discussion paper, wherein I have suggested that an alternative to the present approach to the contest could be to have an exclusive VHF Field Day Contest. I can remember back in the days of the VK5 VHF Group that such an event on a local basis was well patronised.

I again hasten to assure you that I have nothing against VHF etc, however, I sincerely believe that the present approach is a waste of the Contest Manager's time and virtually an affront to him.

I would not wish to conclude my comment on the 1986 Ross Hull Contest without providing a special mention regarding the entry of Noel VK3AUG. Noel tried exceptionally hard in the contest using only *one band*. Surely an effort worthy of great merit. You will undoubtedly realise the value of this effort when I tell you that Noel is really one of the "Older" of the "Old Timers", and

I know that he will not mind me describing him in such terms, as they are meant as an expression of respect. Noel is aged 74 and a half years and obtained his AOCP in 1937 with the call sign of VK3UG, which was changed after World War II to VK3AUG. It is certainly a pity there are not more like Noel about, who would go to some lengths to try and support a contest by participation in an effort to try and ensure its continued presence. Good on you Noel!

GENERAL COMMENT

I have still not completely sorted out the matter of all the certificates outstanding at this stage. This is one of those tasks which I have tended to put aside in favour of more urgent work, however I realise that to the recipients it is of some importance. Rest assured still that you have not been forgotten and that this aspect of the contest manager's work will very soon be brought right up to date.

I recently received a copy of the listing of all International Contests together with the modes applicable and the dates for 1987, 88 and 89. These have been compiled by the International Amateur Radio Union (IARU) and refer only to contests originated and sponsored by member societies of the Union. (See March AR for the IARU Contest Table). Taking these into account indicates that for each year, there are 35 contests for CW operators, 23 for Phone and only one for RTTY operation. This however, makes a total of 59 contests held on 48 weekends. On top of this there are all the other contests organised by magazines, such as *CQ* and *73*, together with the multitude of events run by local Divisions and various private clubs, etc. No wonder that at times it is claimed that there are too many contests.

JOHN MOYLE MEMORIAL FIELD DAY CONTEST

I do not understand just what happened in connection with the published rules for the Field Day Contest, however a couple of items within the rules were somehow missed in the final listing.

Whilst it is a little too late to do anything about this situation for this year, I will include the missing portions in these notes. At least, that way there will be a more or less permanent record of them and the next FCM may see fit to add them to next year's rules. The missing portions are in connection with New Zealand stations operating portable in the ZL Field Day Contest. Details are as follows:

To be added to Rule 9, Number Exchange.
"*One Exception* exists in connection with Rule 9. Where contact takes place with a Field Day Station which is operating in the NZART Field Day Contest the Serial Number Received will be as transmitted by the ZL station according to the rules under which that station is operating in the ZL Field Day; (eg RST/Branch No, etc)."
Rule 10, Scoring should be amended to read as follows.
"For Portable Field Stations — Contacts Outside Australia
(G) Contacts with ZL Field Day Stations — 20 points
(H) Contacts with other overseas stations — 2 points"

These changes to the rules acknowledge the value of contact with other stations in the field and bring the points score for such contacts properly in line with the general approach to scoring in this contest.

It would appear, following perusal of my copy of the material provided for the February issue, that somehow the typesetter for the magazine had worked from a copy of the 1986 rules. The "Contest Disqualification Criteria" referred to should have been those printed in the 1986 August issue of the magazine and not the 1985 issue as quoted. Mind you, I can understand the possibility of such mistakes as the rules for both 1986 and 1987 are almost identical and it could have been convenient to refer to the earlier printed set of rules to assist in making up the layout for the magazine.

By and large there have been very few problems of this nature over the years and considering that a large amount of the work done for *Amateur Radio* magazine is on a voluntary basis I cannot but help admire those who work together to produce such a good magazine for us each month. The Editor and all his helpers and others involved in the production certainly deserve our congratulations on their continued efforts.

REMEMBRANCE DAY CONTEST SCORING

Recently I received a copy of an article written by Colwyn Low VK5UE, on the subject of Remembrance Day Contest Scoring. I would expect that this article would have been published by now and I commend it to your attention. Colwyn forwarded an advance copy of his article to each of the Divisions in his attempt to start some further thinking on the subject.

In his article, Colwyn has addressed one of the main points which has concerned my regarding the scoring method used, that being the cancelling out of the number of contestants from each State when the formula is applied. I have been at pains to try and show that this approach was effectively removing the participation aspect from [illegible].

Now, Colwyn is a professional engineer with a keen appreciation of mathematics, in fact, way above my head, thus I both respect his opinion and also must admit to some pleasure at the fact that he seems to agree with my thinking on the [illegible].

This then is another matter which I intend to bring up in my report to the Federal Convention.

Undoubtedly, the matter of Remembrance Day Contest scoring is always a vexing question. I do find it interesting however, to see just what differences in results can occur by the manipulation of the various formulas.

Well, perhaps I had best begin working on the Federal Convention Report and finish off the notes for this month. I trust that you continue to enjoy your hobby, particularly contesting. It certainly seems that propagation is improving which augers well for contesting and DXing on the HF bands.

—73 until next month, de Ian VK5QX

The following contest may be of interest to VHF/UHF readers. If you are visiting the Northern Hemisphere in July, take some VHF/UHF equipment.

THE THIRD ANNUAL CQ WORLD-WIDE VHF WPX CONTEST

STARTS: 0000 UTC Saturday, July 18, 1987
ENDS: 2400 UTC Sunday, July 19, 1987.
CONTEST PERIOD: 48 hours for all stations, single or multi-operator. Operate any portion of the contest period you wish.
OBJECTIVES: are for amateurs around the world to contact as many amateurs as possible in the allotted 48-hour period, to promote VHF/UHF activity, to allow VHFers the opportunity to experience the enhanced propagation available at this time of year, and for interested amateurs to collect VHF prefixes for award credit.
BANDS: 50, 70, 144, 220, 432, 902 and 1296 MHz bands may be used, as authorised by local law and license class.
TYPE OF COMPETITION: 1. Single operator — (a) all band; (b) single band; (c) all band, low power; (d) single band, low power. 2. Multi-operator — (a) all band; (b) single band. 3. Portable (with temporary power source only). 4. FM only. The "portable" category is for single or multi-operator stations. Low power is defined as 30 watts PEP output or less. Stations may select one category of competition only. All transmitters must be located within a 500 metre diameter, or within the property limits of the station licensee's address, whichever is greater. The antennas must be physically connected by wires to the transmitters.
EXCHANGE: Call sign and "Maidenhead" locator grid square (four digits, eg FN20). Signal reports are optional and need not be included in the log entry.
SCORING: One point per QSO on 50, 70 and 144 MHz, two points per QSO on 220 and 432 MHz, four points per QSO on 902 and 1296 MHz. Work stations once per band, regardless of mode. Multiply total QSO points times the total number of prefixes (PX) worked. *This differs from the scoring for the CQ HF WW WPX Contest, where a prefix counts only once regardless of band.*

Example: W1XX works stations as follows:
37 QSOs and 12 PXs on 50 MHz
45 QSOs and 18 PXs on 144 MHz
26 QSOs and 10 PXs on 220 MHz
36 QSOs and 11 PXs on 432 MHz
6 QSOs and 3 PXs on 1296 MHz
W1XX's total score is: 232 QSO points X 54 PXs = 12636.

MULTIPLIERS: The multiplier is the number of prefixes worked additive on a band-to-band basis. A prefix is considered to be the three letter/number combination which forms the first part of an amateur radio call sign. A station in a call area different than that indicated by his call sign is required to sign portable. This applies even for home stations, eg WB2OTK is required to sign /4 for contest purposes only. In all cases, the portable prefix is the multiplier.
Example: NV6O/2 counts as NV2, KT2B/VE3 counts as VE3, etc. Special event, commemorative and other unique prefix stations are encouraged to participate.
A station who changes location during the course of the contest is free to contact as many other stations as he wishes; however, the moving station counts as only one QSO and PX unless he changes call areas during the course of operation, in which case his prefix changes by definition, thus becoming a new QSO and PX. Example: K2SMN operates from the NJ/PA border; he may be counted as K2SMN for one QSO and one PX (K2) by all those he contacts from NJ. He may be counted as K2SMN/3 for one QSO and one PX (K3) by all those he contacts from PA, including stations previously worked from NJ. Changing "grid squares" does not justify a new contact.
AWARDS: Many will be awarded to top-scoring stations. (In 1985, 24 different trophies were awarded in eight categories spanning three major geographic areas).
LOGS: Must be postmarked no later than August 31, 1987 to be eligible for awards. Logs should be mailed to the CQ VHF WPX Contest, c/o SCORE, PO Box 1161, Denville, NJ 07834, or to CQ Magazine, 76 N Broadway, Hicksville, NY 11801.

—Contributed by Peter Putman KT2B, CQ VHF WPX Committee Co-Chairman

HAZARD "BUZ" REEVES K2GL (SK)

ELECTRONICS PIONEER "Buz" Reeves K2GL, 80, died suddenly on December 23, 1986. Buz founded numerous companies, the best known of which was Cinerama, which created the cinematic sensation of the 50s by the same name. Cinerama also developed stereo magnetic recording film. During the 70s, this company received two Academy Awards for these technical developments. The X-ray cutting process developed by another one of his companies to turn-out perfect crystals is responsible for today's numerous quartz crystal uses. Because of the importance of these crystals to communications during World War II, the company was awarded several citations by the military.

Buz assembled one of the top amateur radio stations in the world. At the time of his death, the station consisted of 12 operating positions, each using Kenwood 940s and Alpha 77 or Henry 3K linears. The antenna farm consisted of over a dozen towers, most 30 to 60 metres tall with several dozen beams and quads. Over the years the station has used the call signs K2GL, K2GM, WA2ZAA and, most recently, N2AA. The station has won top honours in the multi-operator, multi-transmitter category of the major international contests such as the ARRL DX and CQ WW DX Contests.

He was a strong ARRL supporter and a frequent benefactor of the ARRL Foundation. It was his initial pledge of $10 000 which caused the Goldwater Scholarship Fund to be created.

—From *The ARRL Letter* January 13, 1987

Spotlight on SWLing

Robin Harwood VK7RH
52 Connaught Crescent, West Launceston, Tas. 7250

Recently, I was involved with the Australian — Vanuatu Emergency and Traffic Net, which was activated very rapidly after it had become apparent that Vanuatu had been completely devastated by a cyclone. Communications were in disarray and amateur radio provided a vital link in relaying health and welfare messages.

Sam Voron VK2BVS, quickly organised a network of amateurs in Australia and the South Pacific to continuously monitor 14.307 MHz to assist the Vanuatu amateurs. At deadline time, the net is still operational, but is scaling down as other communications become available. Out of this disaster has come temporary third party agreements with both Vanuatu and the Solomon Islands.

Already this year, we have had several cyclones in the Cook Islands, on the Futuna Islands, Fiji and now Vanuatu. Last year, the Solomon Islands and Tonga were hit. This has certainly highlighted the need for an emergency channel for third party traffic within the South Pacific. Because most South Pacific nations cannot afford expensive satellite communication systems, there will be a continuing need for HF communications. Will the channel of 14.307 MHz continue to be it? Time alone will tell. The Pacific Maritime Mobile Net is close by on 14.314 MHz around 0430 UTC, so it is close by to maintain liaison.

Incidentally, if you wish to monitor Pacific HF broadcast channels, there are a few easily heard in Australia. Radio Noumea, in New Caledonia has been well heard for over 30 years now, on 7.170 MHz from 0700 UTC until 1100 UTC. It is in French naturally. Other channels in use are 3.345 MHz and 666 kHz. Radio Vanuatu has been heard on 3.945 MHz from around 0730 UTC onwards. It was also on 7.260 MHz, but this has not been heard since the cyclone, yet could be operational again at anytime. The Solomon Islands is on 5.020 MHz around 0830 UTC onwards. I have also occasionally heard them on 9.545 MHz in our local daytime and they sign-off that channel at 0730 UTC. Their MW channel of 1.125 MHz is a clear channel here in Australia and I have heard it once.

The final Pacific HF broadcaster is RFO Papeetee, in Tahiti. This is well heard in eastern Australia on 15.170 MHz. I hear it from 2300 UTC until 0730. The station is in French but there are programs in Polynesian. It is also on 6.135 and 11.960 MHz. Incidentally, the frequency varies slightly from day to day. All of the above do QSL, but appreciate International Reply Coupons (IRCs).

I have not included the Papua-Nuigini station that also operates on HF, because they require additional information, that I have not room for. They operate between 3.200 and 3.400 MHz and are provincial stations. The national station on 4.890 MHz from Port Moresby has provided a good signal in our local evening hours.

And, while we are on tropical bands, I was recently in conversation with a couple of VK4s who have come down to study at the Australian Maritime College. They have told me that the constant atmospheric static crashes render the lower HF channels unusable during the summer months. That is why the users gravitate to higher frequencies. It also explains why there are few MW stations in tropical areas. This problem has been recognised ever since broadcasting commenced, and allocations were made for broadcasting within tropical areas. These are 2.300 to 2.495 MHz, 3.200 to 3.400 MHz and 4.700 to 5.100 MHz. You will find many broadcasters within these allocations, generally low-powered.

There has been an increasing trend for international broadcasters to transmit within the 60 metre tropical band (4.700 to 5.100 MHz). These bands were largely reserved for local domestic broadcasting. Radio Moscow, Radio Beijing and Radio Pyongyang have been heard here with external programming.

The band 3.900 to 4.100 MHz is also a broadcasting band within tropical areas and also in Europe. That is why many European broadcasters are heard, such as the BBC, Radio France International and Swiss Radio International in North and South America, this band is reserved for either amateurs or utility services, so it is unusual to hear Latin Americans on this band.

An unusual broadcasting event took place on Sunday, January 25. Two international broadcasters conducted a joint program, linking up from their respective studios by satellite. Radio Australia and Radio Japan linked up for an hour from 0900 to 0900 UTC in English. At that time, Tokyo was broadcasting to Australasia on 15.235 and 11.880 MHz and Radio Australia was on a number of channels, including 9.710 MHz to Japan. The program was in English and it was jointly hosted in Melbourne and Tokyo. Radio Australia had a hiccup at the start, when they briefly lost the satellite feed from Tokyo, but this was quickly restored.

Audio quality was excellent and I found it interesting to compare both Radio Japan and RA for signal strength. A special QSL card was issued by both broadcasters to commemorate this joint broadcast. Could this mean an exchange agreement of transmitter time, similar to that between Radio Japan and Radio Canada International? Only time will tell.

Well, that is all for this month. Until the next time, the very best of 73 and good listening!

—Robin VK7RH

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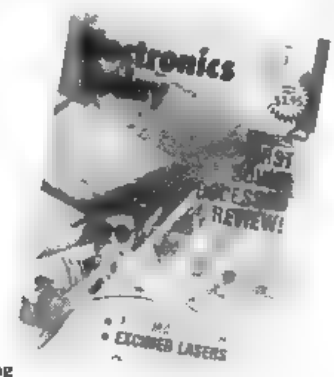

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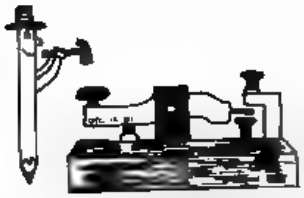

Pounding Brass

Gilbert Griffith VK3CGG
7 Church Street, Bright, Vic. 3741.

MORSE OUT TCW IN! ! !

All groups involved in CW (Morse) transmissions are in the process of being consulted regarding the imminent introduction of one of two new modes of transmission.

A recent letter from the International Secretary for Morse Standards Mr Esle Roesrom, states that, "At the January Conference on Communication, it was decided to introduce one of the two new modes after the appropriate consultation with the main users.

"Although amateurs represent only a small fraction of the user groups, your recommendation and/or preferences are being sought in this matter."

It is estimated that a general speed increase of 50 to 100 percent will be achieved with the new mode, bringing CW out of the past and back into the present and allowing competition with Baudot, ASCII, etc, and the speed of a competent user should far exceed voice transmissions.

Expected licence test speeds are to be at 10 and 20 words per minute in place of the five and 10 words per minute at present, so writing quickly and clearly will become an important aspect of the examinations.

In many people's minds, this will be a great step forward as there are enough people getting through examinations these days by merely ticking the boxes and trusting to luck.

Here is a brief run-down on the proposed modes.

Mode 1 — TCW (triambic carrier wave)
To consist of three different duration bursts of carrier of one dot length, two dot lengths and three dot lengths, with the usual letter and word spacing. It is generally agreed that the saving in time and speed increases of 50 percent or so will more than offset the slightly more difficult learning process. There will be 39 characters of three units or less each. See Table.

Mode 2 — FSTCW (frequency shift tone CW)
This will consist of up to three equal length dots or carrier bursts which, when centred on a tone of 750 Hz (main carrier) will provide a high tone of 800 Hz and a low tone of 700 Hz. There are 27 characters available in three tone bursts alone. I have drawn up a table of the proposed characters with the key for both modes 1 and 2.

Mr Roesrom suggests that "the most likely outcome will be in favour of mode 2, (FSTCW) because of the narrow bandwidth, the necessity of being on the exact frequency and the musical quality of the transmission."

Evidently, the decisions on the character code itself took up three weeks of the conference in order to stop the generation of popular songs by using the appropriate characters. (Hi Hi)

On air tests suggest that, "this mode (2) is especially good at cutting through static and QRM, etc." Having heard both modes on tape, I agree entirely. An enclosed file of letters from the "big three" indicate that Mode 2 equipment is in the pre-production stage at the present time. These will be single mode, multi-band rigs without the useless extras such as microphones, speech compressors, ALC, etc, etc so their price will be attractive. They will also feature in-built TCW/FSTCW generators and the new design paddles so there will not be any need for all those wires on the desk.

That is all the information I have at the moment, so if you wish to comment, I am prepared to collect all mail and direct it to the Secretary by June 1. Please address all mail as follows:
New Mode CW, c/- Gil Griffith VK3CGG, 7 Church Street, Bright, Vic. 3741
to arrive no later than June 1.

I will answer any questions and keep you informed in next month's column.

You may recall back in December AR, a reference to *Morsum Magnificat*. Marshall has sent me a first edition to peruse. If you are a Morse addict I suggest you take advantage of this new publication. It features 15 or so articles in 50 pages and makes interesting and entertaining reading. The editors are looking for your articles as well, so any stories, anecdotes or circuits would help. Simply send an International Bank Draft for $A13 to Tony Smith G4FAI, 1 Tash Place, New Southgate, London, N11 1PA, England.

Here is a brief excerpt from a short article by Keith Crittenden G0CGB:

" . It wouldn't matter what I said , I had already told him I was going QRT, so he wouldn't expect me to reply. At last he signed off, but what's this I hear? Another signal. What are they saying? They are calling me, someone's tail-ending my contact. I'm not ready for a second bout tonight . . help!

"There followed a most ridiculous QSO. It took all my concentration just to copy down the Morse, leaving none of my brain free to actually read what I was writing. I became totally panic-stricken and, reading from my crib- sheet, told my contact I was having trouble with the receiver, and had to go QRT . "

I wonder how many of us remember those heady days of cold sweat and fear . ?

The other day, I just happened to be tuning around 80 metres on the QRP home-brew that I sometimes keep at work when, in walks a fairly regular customer who usually parks his car in front of my shop around 4.30 pm whilst visiting the supermarket next door.

He seemed to be understanding the Morse pretty well, (most people say, "Is that Morse code?") so we got to talking and it appears, that during the war, he used to copy code for an intelligence department. Not only International Morse though! He used special typewriters to copy Russian AND Japanese codes! Anyway, I will try to extract a story out of him and see what I can come up with for the column in the near future.

After mentioning the "Beast" last month, I came across another coincidence while reading this months' AR. Ivan Huser's *Touch Keyer*. An easy circuit to build, especially if you have already built the accu keyer, so I will be adding Ivan's front end to mine very shortly.

Speaking of accu keyers, there are a number of modification going around the traps which are useful for cleaning up the timing and adding some speed to the basic version (EA, March 1978). My keyer runs okay on 12 volts with only a couple of modifications to increase the speed but many operators use six volts with all the modifications and have a really great signal. I will present a list next month. Meanwhile, if you want to build one, the paddle is still available in New Zealand, and the board can be bought from RCS, in Sydney.

I believe the Curtis 8044 series chip is available, as I wrote for specifications last year, but as far as I know, no one imports it. If you know of an Australian distributor, please let me know. Otherwise, I will find out about ordering direct. (Check the *ARRL Handbook*, page 29- 2, 1986 edition).

Are you ambidextrous? Can you send Morse with either hand?

If so, I need your help. I am sick of scrabbling for a dropped pen and trying to write at the same time as send. I want to learn to send with my left hand, too. I feel it would be great for contesting, and for writing out that word which just won't come "off the top". Today I am putting a polarity switch into my paddle, so that the dots come off the left thumb — let us hope I am on the right track!

How about an award? Let us say 50 contacts before the end of the year, by your wrong hand (or foot) and a log insert signed by another couple of amateurs to the effect that they feel you are honest, and that they have seen you send with both hands. Speed is unimportant, so I will see you on the air.

. . 2B for this month.

—Gil, ar

Table 1.

KEY

MODE 1

. dot
o dah (two dot lengths)
- dash (three dot lengths)

MODE 2

. 700 Hz or - 50 Hz. One dot length
o 750 Hz or 0 Hz. One dot length
- 800 Hz or +50 Hz. One dot length

A	.-	T	-
B	-...	U	..-
C	-.-.	V	...-
D	-..	W	.--
E	.	X	-..-
F	..-.	Y	-.--
G	--.	Z	--..
H	....	1	.----
I	..	2	..---
J	.---	3	...--
K	-.-	4	....-
L	.-..	5	.....
M	--	6	-....
N	-.	7	--...
O	---	8	---..
P	.--.	9	----.
Q	--.-	0	-----
R	.-.	?	..--..
S	...		

IMMORTAL WORDS OF ADVICE

BEWARE of the lightning that lurks in an undischarged capacitor, lest it cause thee to be bounced on thy buttocks in a most ungentlemanly manner.

CAUSE thou the switch that supplies large quantities of juice to be opened and thus tagged, so thy days may be long on this earthly vale of tears.

PROVE to thyself that all circuits that radiate and upon which thou work are grounded, lest they lift thee to high frequency potential and cause thee to radiate also.

TAKE care that thou use the proper method when thou take the measure of high-voltage circuits so that thou do not incinerate both thee and the meter; for verily, thou hath no account number and can easily be replaced, the meter does have one, and as a consequence, brings much woe to the supply department.

TARRY not among those who engage in intentional shocks, for they are surely non-believers and are not long for this world.

TAKE care thou tamer not with interlocks and safety devices, for this will incur the wrath of thy seniors and bring the fury of the safety officer down about thy head and shoulders.

VERILY, I say unto thee, never service high-voltage equipment alone, for electric cooking is a slothful process, and thou might sizzle in thy own fat for hours before thy Maker sees fit to drag thee into His fold.

—From *Collector and Emitter* November 1966

Sydney Amateur Digital Communications Group AX25-X3 Protocol for use in Amateur Packet Radio

Part 1: OVERVIEW

Steven Blanche VK2KFJ
Secretary, SADCG
PO Box 231, French's Forest, NSW. 2086

THIS ARTICLE IS based on the SADCG AX25 protocol Instruction manual for the Vancouver Amateur Digital Communications Group (VADCG) Terminal Node Controller (TNC), I have used the relevant information, to provide guidelines for individuals wishing to write their own packet software. The X.3 parameters were first used in the Vancouver V2 protocol, by the VADCG and are now adapted by the SADCG to work with the AX25 protocol

The X.3 parameters where implemented into the AX25 protocol, as the SADCG felt that it would be better to use an international standard, this being the CCITT X.3 Recommendation for Terminal Interfaces, or otherwise known as CCITT X.3 Terminal Interface Protocol (X.3 TIP) This would make it easy to use, for amateurs already involved in the telecommunications industry, plus allow easy adaption of commercial packet software.

The X.3 parameters used in amateur radio is sometimes referred to as the AX.3 parameters or AX.3 TIP. The SADCG AX25 software for the VADCG TNC is broken into three sections AX25 Link Interface Program (LIP), AX25 Network Interface Program (NIP) and AX25 Terminal Interface Program (TIP).

COMMAND STRUCTURE

The command structure is based on the CCITT X.3 standard for tailoring the interface between a terminal and a digital data network node controller (in this case, your TNC) X.3 parameters typically control the insertion of line-feed characters, setting an idle timer and controlling the flow of data between the TNC and the terminal. There are some additional commands which are specific to the amateur packet radio situation and not within the scope of the X.3 standard. These commands allow the user to link and unlink from other stations, to select another packet radio protocol, or to enter a monitor program in the Master Control Subsystem.

To issue a command, place the TNC into command mode by typing the Command Escape Character (usually an ASCII Escape) defined by X.3 parameter 1. The use of a "*" (asterisk) indicates that the TNC is in command mode. If there is still data in the terminal buffer to be transmitted when the Escape character is typed, that data will be placed into a packet and transmitted automatically. Note that the TNC will not respond to the Escape character if X.3 parameter 1 is set to 0 (see the TRansparent command If you wish all characters entered at the keyboard to be transmitted) If you wish to send the Command Escape Character during normal "conversation ," type it twice and it will be sent once.

The format of a command is

<ESCHAR> <command> <operand > <CR>
where
<ESCHAR> is the current Command Escape Character (X.3 parameter 1) which defaults to ESCAPE (ESC) in distribution versions. This will place the TNC into command mode (if allowed by parameter 1).
<command> is a command from the table following.
<operand > is the data to be used by the command, If required (see below). Some commands have no operands and others require one or more.

For example, to set the call sign of the station to VK2ABC, type:

<ESC>CA VK2ABC<CR>

Note: The angle brackets < and > are used to enclose a single character for visual purposes only. You do not type them, just the single character defined within them. For instance, <CR> means you press the carriage return key, not <, then carriage return, then >.

No spaces are allowed between the <DCCHAR> and the command. At least one space is required to separate the command from an operand (if an operand is required), and there should be no trailing spaces after an operand. The command is required to be at least two characters long, but may be longer. For example, CO, CON, or CONNECT will all do the same thing. The commands may be typed in upper, lower or mixed case. Input is converted to upper case in the command processor Characters entered for transmission will not be converted to upper case. The maximum length of a command line is 80 characters.

During command entry, use the editing characters (parameters 15 to 19) to correct errors. TNC will sound the bell in your terminal (assuming you have one!) if you try to back up too far. The bell will also sound in case of an invalid command or operand.

The available commands follow. Note that the minimum command is given by two capital letters. In some cases these are not the first two letters of the command.

Commands labelled as not yet implemented are planned for the near future. They are accepted as valid commands by the TNC, but have no effect.

Note: Call signs are all six characters in length. If your call sign is less than six characters, enough trailing spaces will be added to make it up to six If a station has more than one TNC with the same basic call sign, the call sign may be followed by a minus sign (-) and a Secondary Station Identifier (SSID) number which may take values from 0 to 15. If your call sign is six characters long, the minus sign before the SSID is optional. If no SSID is specified, a default value of 0 will be assumed. Example call signs: VK2ABC, VK2ABC-1, VK2AB, VK2AB-10.

CO COnnect <call sign><CR>
Leave monitor mode and attempt to link to the station with the specified call sign.

CO COnnect <call sign>rpt1 rpt2 .. rptn<CR>
Leave monitor mode and attempt to link to the station with the specified call sign using the digipeaters whose call signs are specified in the "rpt" positions. Your transmissions will be repeated first by the call sign in the "rpt1" position followed by "rpt2" and so on up to a maximum of eight repeaters.
For those who are used to the TAPR connect command, the following format is also supported.
COnnect <call sign > via rpt1 rpt2 .. rptn.

DI Disconnect <CR> Performs the reverse function of COnnect. Causes the TNC to unlink from the link partner and return to monitor mode. This command takes no operands and is in error if a link is not [redacted]

CA CAll sign <call sign><CR> Set the call sign of this node. Useful for changing the call sign of a borrowed TNC without burning new EPROMS. Operand must be one to seven characters, and will be converted to upper case. The default call sign is in the MASTER EPROM.

IN INitialise<CR> Passes control back to the MASTER which displays the protocol selection menu. This is the same as hitting the RESET switch on the front panel except that the MASTER does not require an AUTOBAUD sequence. No operand required. Use this command to change from one protocol to another.

AB ABort<CR> Acts the same as the INitialise command. Will be changed at a later date. No operand required

MO MOnitor<CR> The monitor in the MASTER is entered. You may use the monitor and then return to AX25 protocol without losing present status. This command is mainly used during software development, but it also allows the user to view the various buffers in the TNC. This command does the same as hitting the TRAP switch except that no AUTOBAUD sequence is required. No operand. See the Master Control Subsystem Manual for more [redacted]

MM Monitor Mode<CR> This is for a planned facility which has not been implemented as yet.

TR TRansparent <option><CR> Places the TNC in the selected transparent mode. Once the TNC is transparent, all data sent to it is transmitted (including eight bit data). The option selects the method of exciting from transparent mode
Option = 0 (or absent) — you must generate a "break" from the keyboard. The TNC will be returned to command mode. Alternatively, press the TRAP or RESET buttons on the TNC.
Option = 1 — generate a break or the following conditions must be met.
1. Wait until the TNC has no more data to send (the TNC is idle).
2. Send three Command Escape Characters before the idle timer times out (the default allows about one second maximum between each character) The Command Escape Character used should be the one that was in effect before the TR command was given (default is ESC).

[redacted] SEt <decimal parameter #> <decimal value #><CR> Set X.3 parameter values. This command is used to set parameters which tailor the way the TNC communicates with the terminal or computer, as well as the way the LIP (datalink) and NIP (network) programs function The default values of these parameters and their function is described in a later section of the manual. The operands may be a list of parameter reference numbers and corresponding values each separated by a [redacted]

PA PAr? <decimal parameter #><CR> Display the current value of the specified parameter. The operand may be a list of parameter numbers each separated by a space.

ST ST <decimal parameter #> <decimal value #><CR> Set X.3 parameter values used during transparent mode. This allows optimisation of TNC parameters used during transparent operation As transparency is implemented by using this special set of parameters, this command

should be used with care, especially with parameters 1 to 3, 5 to 10, 12 to 15, 19 to 22

PT PT <decimal parameter # > <CR> Display the current value of the specified transparent mode parameters.

MESSAGES

AX25 LIP 053186 AX25 NIP 053186 AX25 TIP 053186

This is the initial logon message which should be displayed on the terminal when the AX25 protocol is selected from the MASTER menu. The numbers represent the date when the software was last changed.

This is the prompt character which indicates the TNC is in command mode. The ** prompt will only appear if command mode is permitted and prompt signals are allowed. See X 3 parameter numbers one and six.

<CALLSIGN> linked
This service message indicates that a link has been established with the call sign displayed.

(CALLSIGN) linked via rpt1, rpt2 etc
This service message indicates that a link has been established and shows the digipeater path. The digi call signs are displayed after all messages where applicable.

<CALLSIGN> unlinked
This message appears after a Disconnect command has been acted upon.

(CALLSIGN) busy
This appears when the station called is already connected to another.

<CALLSIGN> endlink
This message appears when a DISC (disconnect) frame is received from a linked node and indicates that the link is terminated. It means that the link was terminated from the other end.

<CALLSIGN> no contact
This message appears after a selected number of time-outs have occurred and the network layer has decided that communication with the other node is impossible. The link is not established.

<CALLSIGN> unknown
This message indicates that an unknown link status code has been received from the datalink layer (LIP). This indicates a software error of some kind and its occurrence should be reported to the software developer.

PAR <xx yy>
This is a response to the 'PAR?' or 'PT' command and means that parameter xx is currently yy.

PAR <xx INV>
This is a response to the 'PAR?' or 'PT' command and means that parameter xx does not exist.

ERROR
This message occurs when an unknown or incorrectly formatted command is entered, a parameter value is invalid or the command is not permitted at this time. Note that this message also rings the terminal bell (if you have one!)

[redacted]
This message indicates that terminal output has been paused according to parameter 22 (Page Wait). After reading the page of output, type a control Q (XON character) and terminal output will resume.

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Book Review

ALL ABOUT VERTICAL ANTENNAS

by W Orr and S Cowan

Published by Radio Publications

Gil Sones VK3AUI
30 Moore Street Box Hill South Vic 3128

This book covers all aspects of vertical antennae. Both theory and practice are covered in a most readable form. The performance of vertical aerials is discussed together with how to optimise performance. Construction of simple and complex aerials is discussed. There are many helpful tips for the practical realisation of designs.

The importance of earthing to vertical aerial performance is explored and various forms of earthing, both actual and virtual are described. Ways of improving and optimising grounding are shown — a most important topic for a vertical [redacted].

Single, multiband and wideband designs, ranging from modest to elaborate aerials, are dis[redacted].

Vertical arrays are discussed and several designs are given for directional arrays. Performance of these designs is also discussed.

Practical designs of both modest simple aerials and quite elaborate arrays are given. These include helpful constructional information, together with tune-up information.

The performance and characteristics of vertical aerials is explored.

Whether you are erecting a converted CB aerial or an elaborate array, this book has the information you need. Another excellent publication for Bill Orr and Stuart Cowan.

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EXTENSIVE RANGE OF ELECTRONIC COMPONENTS FOR THE RADIO AMATEUR, HOBBYIST & PROFESSIONAL including AMIDON & NEOSID FERRITE PRODUCTS.

- STOCK DREW DIAMOND'S 4 WATT CW TX AND DC86 DIRECT CONVERSION RECEIVER FOR 80m (see AR Jul/Oct)
- AMATEUR REF BOOKS (RSGB & ARRL HANDBOOKS), VHF MANUALS, ANTENNA MANUALS & MOTOROLA NATIONAL DATA BOOKS
- FULL RANGE 27 MHZ & 477 MHZ CB RADIO & ACCESSORIES
- UNIDEN SCANNING RECEIVERS
- COMPUTERS
- WELZ TP-25A 50-500 MHz DUMMY LOAD — POWER METER

Australian Ladies Amateur Radio Association

Joy Collis VK2EBX
PUBLICITY OFFICER, ALARA
Box 22, Yeoval, NSW. 2868

I often hear people say: "Yes, I am interested in amateur radio, but I am too old to study for it now" or "I didn't have a very good education, so I couldn't pass the examinations" or even (horrors!) "But it is really a man's hobby, isn't it?"

I recently received a letter from a lady who refutes each of these arguments — Margaret VK2MV. We will let Margaret tell it her way:

"In 1973, at the age of 63, I broke my ankle and was forced to leave lovely Forster, where we had retired to a very steep, elevated position at Bennett's Head.

"Lester VK2KT, my OM, had been an amateur radio operator since 1927, (OZ3CL, later ZL3CL).

"My injury altered our plans dramatically, I had to move to level ground to become mobile again.

"There was a basic electronics course at Taree Technical School in 1977. As I was unable to play sport, I joined. Having had only 15 months at High School, I knew I had little chance of passing the necessary examinations. However, perseverance "paid off" and in 1978 I received "The Big Brown Envelope" in the mail. *I was a Novice.* There was no holding me now. After another one and a half years of study I received my Full Call, VK2DQG, later VK2MV. No words can describe "that day" — my 70th birthday.

"I am telling you this because I wish to encourage those of us who are not "well educated" to 'give it a go!'" This very special hobby is well worth the effort. Opens up a new world and brings many wonderful friends. Not to mention, opportunities for those who persevere with it.

So go 'TUIT'".

Margaret's letter says it all!

LIZ ANDERSON W3CQD

While on the subject of age and amateur radio, congratulations are due to Liz W3CQD, who recently completed 64 years "on air." Liz, who is 88 years young, is ALARA's oldest member, and still active on CW.

Liz took a national radio course early in World War I, hoping to become a ship operator, and received her commercial licence in 1917. Instead of going to sea, however, she found herself teaching code to hospitalised veterans at Fort Meade and Fort McHenry.

In 1921, she went to work for the Bureau of Statistics, the only woman among the 21 personnel of its radio section. Her work included taking measurements, winding coils, making receivers, testing things and translating radio items from foreign magazines. She also assisted with the publication of *How to Build a Crystal Set from an Oatmeal Box*, which sold 20 000 copies.

In 1922, Liz obtained an amateur licence, and built her first receiver and transmitter (one stage, five watts). She is strictly a CW operator, using her 1922 hand key. She has a two metre hand-held, but rarely uses it.

As she lives in an area where outdoor antennas are prohibited, she uses a 66 foot (20 metre) long multiband dipole strung in her attic, and has worked an impressive number of contacts using this simple aerial.

Over the years, she has built up a widening circle of friends around the world, is an active member of numerous amateur radio organisations, and, has attended many conventions. She has also travelled extensively, meeting overseas radio friends, and has a long list of "pen-pals" with whom she regularly corresponds. She has welcomed numerous radio amateurs to her home, particularly overseas visitors, and has been "too busy" to consider marriage. Liz has been the recipient of a number of coveted awards and trophies.

Her answer to the question "What has amateur radio meant to you?" is summed up in one word — "Friendship!" That she certainly has. Her ALARA friends congratulate her and wish her well.

—Material obtained from *World Radio*, September 1986, *Radio Call* November 1986, Mavis VK3KS

YL CONTESTS

THELMA SOUPER MEMORIAL CONTEST 1987 — JUBILEE YEAR SPECIAL

Along with the usual trophies for this award there will be special prizes, engraved as a permanent record of the Silver Jubilee Year of WARO and to be kept by the recipients.

DATE: Saturday and Sunday, April 4 and 5, 1987, from 0700-1000 hours UTC each evening.

All contacts on 80 metres, phone or CW, a bonus station using the WARO call sign ZL2YL will be in operation for random periods and will count as a multiplier once on each night of the contest, if worked.

Logs to reach the Contest Manager, V Shaw ZL1OC, PO Box 2088, Whakatane, NZ, by May 2, 1987.

DX YL NORTH AMERICAN YL CONTEST

CW, Wednesday April 8 at 1400 UTC to Friday, April 10, at 0200 UTC.

Phone, Wednesday April 15, at 1400 UTC to Friday April 17, at 0200 UTC.

Logs to Mary Lou Brown NM7N, 504 Channel View Drive, Anacortes, WA 98221, USA, by May 27, 1987.

FINLAND YL AWARD

There are 4500 radio amateurs in Finland, of whom 140 are YLs, as yet the YLs do not have their own association, but they do have an Award of their own.

FINNMAID — requirements as follows:

Contacts with OH YL stations. Australians need three contacts, and SWLs need 10 confirmations of their reports. Stations contacted must be owned and operated by OH YLs. Send log data with eight IRCs to: SRAL Award Manager, Box 44, 00441 Helsinki 44, Finland, Europe.

Unfurling the Australian Flag in San Francisco at the home of Mary KB6CLL, with Dan N5FT and Graeme VK0GC (Macquarie Island).

YL ACTIVITIES

Jenny VK5ANW, was delighted to meet Tuti YD0TTK, at the 10th Australian-World Invitational Rover Moot at the Woodhouse Campsite on January 6. Tuti showed a keen interest in ALARA.

Jan VK3DMH, was the only YL to be issued with the special commemorative call sign, VI3PVA, (Papal Visit Australia) in October 1986. She reports that it was a wonderful experience grateful to the OMs who kept the frequency clear for her, "especially during nose-powdering or telephone calls".

Congratulations to Christine Taylor on achieving the call sign VK5ZCQ. (Her OMs former call sign).

It was a real pleasure to meet Nancy VK2NVP when she was passing through this little township recently. Another case of "putting a face to the voice!"

NEW MEMBERS

Welcome to Mary 5W1FM and Eva OH3ST.

Welcome back to Shirley WD8MEV and Margaret VE7DKC. Great to have you with us once again.

Until next month.

—73/33, Joy VK2EBX

Jenny VK5ANW, and Tuti YD0TTK at the 10th Australian-World Invitational Rover Moot at Woodhouse, South Australia. (January 6, 1987).

International News

A YEAR OF PROMISE

1987 will be another busy year for the ITU with a heavy program of conferences and meetings. In addition to the beginning of the CCITT Study Groups' Final meetings for the current study period and the CCIR's Interim meetings, two major World Administrative Radio Conferences, another session of the highly successful USERCOM and the quadrennial world exhibition TELECOM, will all take place this year.

The World Administrative Radio Conference (WARC-79) recognised the unsatisfactory situation in the HF bands allocated exclusively to broadcasting and resolved that the use of the HF bands allocated to broadcasting should be the subject of planning by a World Administrative Radio Conference.

The First Session of this World Administrative Radio Conference for the planning of the HF bands allocated to the broadcasting service — HFBC(1) was held in Geneva in 1984 and established the planning principles and the technical parameters to be used for planning these bands. The Second Session — HFBC(2) — opened in Geneva for a period of five weeks on February 2. It had the delicate task of reviewing the results of the intersessional work and of adopting the procedures for the implementation of improved planning for the broadcasting service in the bands concerned (DSB operation). The Conference was also to adopt technical standards and appropriate procedures for the future introduction of SSB operation. Finally, it was to review and revise the relevant provisions of the Radio Regulations.

The World Administrative Radio Conference for mobile services (MOB-87) will be held for a period of five weeks in September/October. It will review and revise the provisions of the Radio Regulations for the mobile services, the mobile satellite services and the radiodetermination-satellite services.

An important aspect of the work of this Conference will be to complete the regulatory framework required for the implementation of the Future Global Maritime Distress and Safety Systems (FGMDSS). This new system was conceived and formulated by the International Maritime Organisation (IMO) to take advantage of modern communication techniques in order to reduce the present rate at which life and property is unnecessarily lost at sea. MOB-87 will also examine the requirements for the use of public correspondence by aircraft, making appropriate provisions if necessary.

The first International Telecommunication User Conference (USERCOM 85) was the result of a joint initiative of the International Telecommunication Users Group (INTUG) and the ITU. It encouraged and provided the setting for the first real dialogue at the international level between users and service providers. The success of USERCOM 85 has led the ITU and INTUG to collaborate in organising USERCOM 87 which was held in London in March with the theme "Facing up to telecommunication changes". Discussion papers covered:

—the implications of current developments;
—consequences for business;
—the relation between telecommunications and economic growth;
—developing the appropriate regulatory environment.

The convergence of telecommunication and computer technologies provides tremendous scope for enhancing such vital national activities as trade and commerce. It is, therefore, imperative that a wide range of ideas and opinions be available to the World Administrative Telegraph and Telephone Conference which is scheduled to be held in 1988. In this context, informal mechanisms for information exchange amongst all partners involved in telecommunication, including traditional service providers, industry and users, have a most useful role to play. All concerned with the provision and use of telecommunication services would have the opportunity of being heard and understood. In turn, ITU Member governments would be able to prepare effectively for the Conference which will establish the infrastructure regulations to govern interactive data flows of the future.

Finally, what has become the major telecommunication exhibition in the world will be held for the fifth time this year. TELECOM 87 will take place in Geneva from October 20 to 27. The multiple activities which comprise TELECOM — the exhibition, the Book Fair, the World Telecommunication Forum, the Film Festival, the Youth in the Electronic Age Competition — all contribute to make this quadrennial event a real crossroads of ideas and information on every aspect of telecommunications, a meeting place for all concerned with the executive management, planning and extension of telecommunication networks, the development of new technology and equipment, as well as for researchers, investors and financiers, lawyers, scientists, engineers, users and all professions with an interest in the many branches of the telecommunication sector.

—From *Telecommunication Journal*, Vol 54 — 1/1987

ASSOCIATION DES RADIO-AMATEURS DE MONACO

On March 29, 1987, in the Principality of Monaco, the Association AMADE (World-wide Friends Association for Childhood, Association Mondiale des Amis de l'Enfance) held a National Day of Childhood.

The President of AMADE is His Highness The Prince Albert of Monaco.

Founded in 1964 by Her Highness The Princess Grace of Monaco, AMADE is a non-governmental organisation, having a consultative statute such as UNICEF, UNESCO or the European Council.

The National Amateur Radio Society of Monaco, ARM, was active on this day using a special call sign of 3A7A. A QSL card will be sent for each contact made.

The ARM's President d'Honneur is SAS Le Prince Albert de Monaco.

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MORSEWORD 1

Compiled by Audrey Ryan
Wife of Joe VK3ABA

This works like a crossword puzzle. It contains only one word in each row or column and each letter of that word is spelled out in Morse code. Think about the clues and then encode your answer putting a dot or a dash in each square. For example, if the clue were *felines*, the answer would be *cats* and you would write it in the grid thus: - . . . .

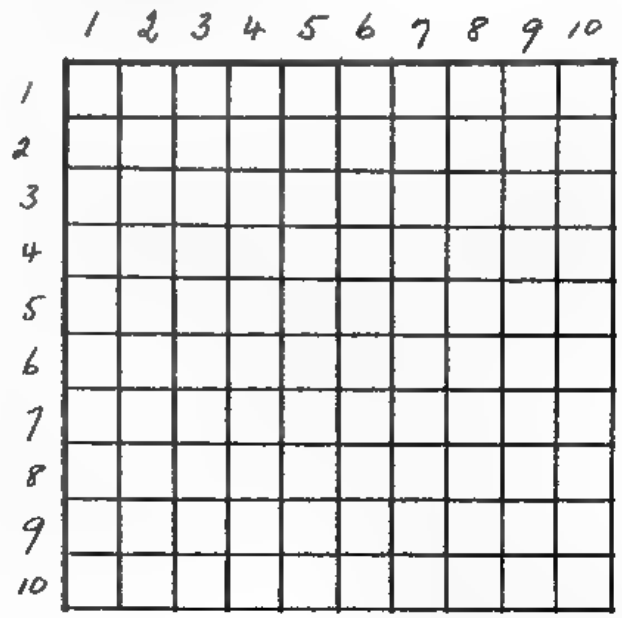
ACROSS

1. Vegetables
2. Plunge under water
3. The port side
4. Type of lettuce
5. Rub out
6. One of the prophets
7. Sudden rush
8. This will stand you in good . .
9. Saliva
10. A coastal feature

DOWN

1. Sports field
2. French military cap
3. I do, you do, he
4. An mal
5. Dirty mark
6. Store
7. Credit
8. Loosened
9. Something useful
10. Facile

© Audrey Ryan 1987



Solution page 57

Education Notes

TRIAL AOCP EXAMINATION PAPER

Brenda Edmonds VK3KT
FEDERAL EDUCATION OFFICER
PO Box 883, Frankston, Vic. 3199

Select the correct or most appropriate alternative.

1 When DC current flows in any conductor
- a current carrier holes move
- b there is a heating effect.
- c the electric field alternates in polarity.
- d electrons move from high to low potential points.

2 If the voltage across a resistor is tripled its power dissipation is multiplied by:
- a 2.
- b 3.
- c 4.
- d 9.

3 The voltage rating of a zener diode is the voltage at which
- a reverse breakdown occurs.
- b forward conduction occurs.
- c thermal runaway begins.
- d the internal resistance begins to rise sharply.

4 A pilot light in a power supply should be connected between
- a the DC output voltage and earth.
- b the mains cord
- c the active and neutral leads of the power transformer
- d neutral and earth leads of the power transformer

5 The function of the screen grid in a tetrode vacuum tube is to
- a reduce secondary emission.
- b control electron flow to the cathode.
- c reduce the control grid-anode capacitance.
- d attract electrons from the anode

6 The resonant frequency of an LC circuit is given by the formula f =
- a $1/2\pi\sqrt{LC}$
- b $2\pi\sqrt{LC}$.
- c $1/2\pi LC$.
- d $2\pi/\sqrt{LC}$.

7 The side bands of an FM amateur transmission
- a should not be more than 3 kHz wide.
- b occur only on one side of the carrier
- c occur at multiples of the modulating frequency.
- d add to the power of the carrier

8 Voltage ratings for capacitors are usually given as
- a peak and working.
- b working and mean
- c inverse and peak-to-peak.
- d peak and mean.

9 The power gain of an amplifier producing 30 watts output with an input of 0.3 watt is.
- a 3 dB
- b 10 dB.
- c 20 dB
- d 100 dB.

10 Interference seen as 'Cross-hatching' on a TV screen occurs when
- a the front end is overloaded.
- b harmonics of an amateur transmission beat with the sound carrier
- c an SSB signal is demodulated by the TV set.
- d an interfering carrier signal beats with the picture carrier.

11 The nominal characteristic impedance of a halfwave folded dipole is:
- a 50 ohms.
- b 300 ohms
- c 72 ohms.
- d 150 ohms.

12 Ionisation of the various ionospheric layers is caused by:
- a changes in weather patterns in the Troposphere.
- b the magnetic field of the earth.
- c upward drifting gas from the earth's atmosphere.
- d radiation from the sun

13 A varactor (varicap diode):
- a shows a decreased capacitance as forward bias increases.
- b may be used as a DC voltage amplifying device.
- c may be used for frequency tuning at VHF.
- d can be used as an amplifier at microwave frequencies.

14 An advantage of the ceramic microphone over the crystal microphone is its:
- a ability to withstand high temperature and humidity.
- b low impedance.
- c greater sensitivity at low frequencies.
- d size.

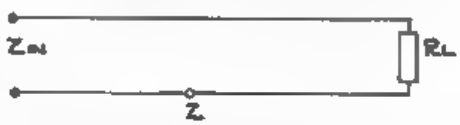
15 Negative feedback at audio frequencies is used to:
- a neutralise power amplifier stages.
- b prevent VHF oscillation.
- c reduce background noise.
- d reduce distortion.

16 For accurate measurements of impedance, capacitance and inductance:
- a bridge circuits are often used.
- b separate meters must be used.
- c an RF reference source is required for calibration.
- d the measuring device should be lightly coupled.

17 A power supply voltage doubler:
- a produces regulated DC.
- b uses a charged capacitor to increase the output voltage.
- c can only be used with a halfwave rectifier.
- d produces an output voltage twice the input peak-to-peak.

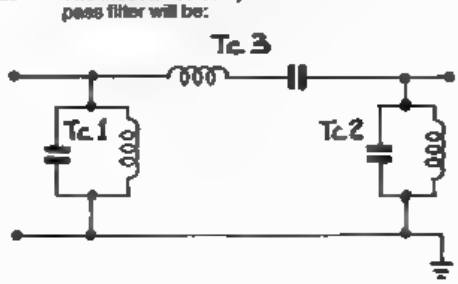
18 An observed frequency shift in signals emanating from amateur satellites is due to:
- a receiver drift.
- b satellite rotation.
- c Doppler effect.
- d transmitter power variation.

19 In this open wire transmission line, if the value of R_L is significantly greater than that of Z_0:



- a the line will have a high SWR.
- b power dissipation in the line will be higher than in the load.
- c the line will be unbalanced.
- d the value of Z_{in} in relation to Z_0 will be frequency dependent.

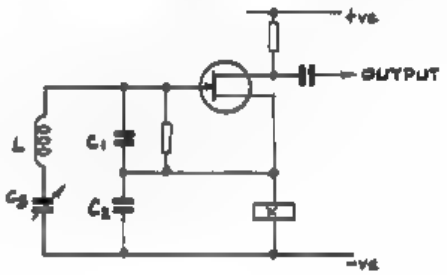
20 The inductance components in this UHF band pass filter will be:



- a iron cored for maximum Q.
- b physically smaller than at HF.
- c chosen so that the resonant frequency of TC1 and TC2 is half that of TC3.
- d chosen so that the impedance of TC3 is maximum.

21 A Lissajous pattern displayed on a CRO:
- a is obtained by applying two simultaneous sine wave voltages to the Y plates.
- b can be used to measure modulation percentage.
- c can be used to directly measure the frequencies of two sine waves at once.
- d can be used to calibrate audio frequency generators against a known reference.

22 To ensure correct operation, component X in this common VFO oscillator circuit must be:



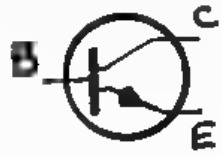
- a a fixed capacitor.
- b an NPN transistor
- c a low value resistor
- d an RF choke.

23 The terminal voltage of a 12 volt lead-acid battery drops to 11.5 volts when connected to a constant load which draws 2 amps. Assuming negligible resistance in leads and connections, the voltage drop is due to
- a the high specific gravity of the electrolyte.
- b a rise in temperature of the load
- c significant internal resistance of the battery.
- d the capacitance between the battery plates.

24 A common single figure element of a digital frequency meter display comprises:
- a seven liquid crystals in series.
- b seven separately controlled LEDs.
- c eight separately controlled LEDs.
- d a series-parallel LED array.

25 A water pipe when used as a common earth at an amateur station may become 'live' if it:
- a is also used as a mains earth
- b has a high resistance path to earth
- c is made of copper.
- d has both transmitter case and coax braid connected to it.

26 During normal operation as an amplifier, this transistor will be biased so that:



a B is more positive than E.
b B is more positive than C.
c E is more positive than C.
d B is more positive than both C and E.

27 The frequency at which consistently good HF propagation is possible is called the:
a MUF
b ALF
c critical frequency.
d optimum working frequency.

28 The "frequency memory" in a modern 2 metre transceiver is normally maintained for long periods in the 'power off' state by:
a an internal lithium battery.
b a single dry cell.
c [illegible]hing off the supply to the liquid crystal display.
d a solar cell.

29 Significant frequency instability in a home built VFO might be cured by:
a reducing the Q of the tank circuit.
b enclosing it in a metal case.
c improving the voltage regulation.
d reducing the L/C ratio.

30 If an SSB full carrier transmission is modulated more than 100 percent it will produce increased:
a output power.
b sidebands.
c intelligibility.
d fidelity.

31 In a triode vacuum tube amplifier, bias is usually set so that the grid potential is:
a more positive than the cathode.
b more negative than the cathode.
c no more than 1.5 volts.
d more positive than the anode.

32 BCI can be diagnosed as cross-modulation if:
a the receiver volume control does not vary the interference audio level.
b it is heard at all settings of the dial.
c it disappears when the broadcast antenna is removed.
d it is heard only when a broadcast station is tuned in.

33 A FET may be preferred to a bipolar transistor in [illegible] it:
a is not temperature sensitive.
b generates less thermal noise.
c remains more stable with small L or C changes.
d does not require a stable power supply.

34 A resistor colour coded red, violet, orange, gold may have any value between:
a 1440 and 1760 ohms.
b 25650 and 28350 ohms.
c 24300 and 29700 ohms.
d 361000 and 399000 ohms.

35 The effective distance of propagation by ground wave:
a increases with increasing frequency.
b varies with atmospheric conditions.
c depends on the conductivity of the ground.
d is strictly limited to line of sight.

36 The RIT control on a modern transceiver [illegible]
a small variations in the receiver frequency.
b reception of International Time information.
c decoding of Repeater Input Tone bursts.
d reset of Incremental Transmit frequency.

37 In a 144 MHz FM transmitter which is modulated at 8 MHz, the frequency multiplication stages will increase the original deviation by a factor of:
a 8/144.
b 6 x 144.
c 2 x 3 x 4.
d 144/8.

38 TVI from the harmonics of HF amateur transmissions can be reduced by using:
a a low pass filter at the transmitter output.
b a higher powered transmitter.
c a narrow band rejection filter at the transmitter.
d a high pass filter at the transmitter output.

39 The transistor oscillator of a DC-DC converter power supply usually operates at a high audio frequency so that:
a RF bypassing is not required.
b a small efficient transformer can be used.
c the transistors do not overheat.
d no transformer is necessary.

40 The approximate wavelength and period of a 10 MHz radio wave will be:
a 10 metres and 0.1 microsecond.
b 15 metres and 1 microsecond.
c 20 metres and 1 microsecond.
d 30 metres and 0.1 microsecond.

41 In this SSB transmitter, block X should be a:

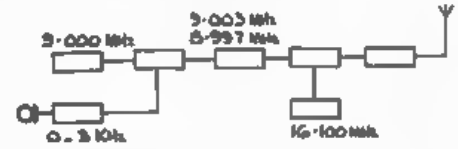
a filter designed to reject 9.000-9.003 MHz.
b buffer amplifier [illegible]
c frequency multiplier.
d filter designed to reject harmonics of 9 MHz.

42 A modern VHF receiver tuned in 25 kHz steps:
a is crystal locked at 25 kHz intervals.
b can only be operated between 144-145 MHz.
c uses a phase locked loop system.
d can be readily modified for continuous frequency tuning.

43 Self oscillation of a transmitter stage can [illegible]:
a a multiplier stage is overdriven.
b it is operated in class C.
c input and output frequencies are the same.
d a modulated signal is being amplified.

44 A test instrument using a permanent magnet moving coil meter to measure AC voltage and resistance must include both:
a switching and capacitors.
b a voltage source and diodes.
c shunts and capacitors.
d inductor and thermocouple.

45 The secondary of this transformer could provide:



a 480 V at 2 amps.
b 360 V at 2 amps.
c 240 V at 2.5 amps.
d 120 V at 1.5 amps.

46 In HF receivers, positive feedback loops are used in:
a audio amplifiers.
b IF stages.
c RF oscillators.
d detector stages.

47 For amateurs the main characteristic of the D layer is:
a absorption of MF and HF.
b reflection of HF at night.
c refraction of VHF.
d its intensity of ionisation at night.

48 The reflector element of a Yagi antenna is:
a longer than the driven element.
b shorter than the driven element.
c shorter than the longest director.
d same length as the longest director.

49 Spurious oscillations caused by stray inductances and capacitances in transmitter circuitry:
a can be stopped by using an appropriate filter.
b are known as parasitics.
c are not [illegible]
d are usually harmonically related to the radiated frequency.

50 The 'gain' of an antenna expressed in dBd usually is:
a gain in free space over atmosphere.
b gain over a theoretical point source.
c gain over a reference dipole.
d dependent on current flow in the driven element.

Intruder Watch

Bill Martin VK2COP
FEDERAL INTRUDER WATCH CO-ORDINATOR
33 Somerville Road, Hornsby Heights, NSW 2077

I commence the column this month with some good news, that of congratulations to those who earned the *Intruder Watch Certificate of Merit* for 1986. The recipients were:

Certificate No 007 G H A Bradford (SWL, NSW)
Certificate No 008 Allan Doble VK3AMD
Certificate No 009 B H Wallace VK4KHZ
Certificate No 010 Tom Walker VK4BTW
Certificate No 011 Lindsay Collins VK5GZ
Certificate No 012 Roy Watkins VK6XV
Certificate No 013 Jim Roddy VK8JF

Our thanks go especially to these people for their good help during the past year.

Thanks also to those who contributed in December 1986, namely:

VK2s ADE, CNS, DEJ, EHQ, G Bradford, VK3s AMD, XB, VK4s AKX, BG, BHJ, DA, KHZ, VK5s GZ, TL, VK6s JQ, RO, XV, and VK7RH.

Statistics for December were:
161 AM intruders, 116 CW intruders, 86 RTTY intruders, 74 other modes, and 35 intruders transmitted their call signs.

You may remember I began last month's column with a reference to the temperature being 30 degrees Celsius at the time of writing the column. I should known when I was well-off. As I write this, February 1, the thermometer has only one click to go to reach the old 100 degree mark (38°C) .. and it's gonna make it!

Statistics are now available for the whole of 1986, but it is a reminder, unfortunately, of the extent of intrusions into our bands.

8014 intrusions were reported for the year,
4089 were AM intrusions,
1796 were CW intrusions;
1262 were RTTY intrusions;
867 were using other modes;
592 identifications were heard.

A total of 65 observers sent in their reports, which totalled 710 pages of logs. There were 167 more logs received than in 1985, which shows that amateurs are still concerned with preserving their bands. Similarly, 14 more observers helped-out than in the previous year. A comparison of the total number of reports received yearly since 1983 might be of interest:

1983	1984	1985	1986
6906	7488	7466	8014

(See the trend?)

So the message, having read the yearly statistics, is clear, and is the same as last year. The aim is continuing support from Observers, to result in less intrusions. So I'll say 73 now while I think about that! See you later ... take care.

PS — the thermometer made it!

er

ANSWERS TO TRIAL EXAMINATION QUESTIONS

1 b	11 b	21 d	31 b	41 a
2 d	12 d	22 d	32 d	42 c
3 a	13 d	23 c	33 b	43 c
4 c	14 a	24 b	34 b	44 b
5 c	15 d	25 b	35 c	45 d
6 a	16 a	26 a	36 a	46 c
7 c	17 b	27 d	37 d	47 a
8 a	18 c	28 a	38 a	48 a
9 c	19 a	29 c	39 b	49 b
10 d	20 b	30 b	40 d	50 c

Awards

Ken Hall VK5AKH
FEDERAL AWARDS MANAGER
St George's Rectory, Alberton, SA. 5014

AWARDS ISSUED RECENTLY

DXCC PHONE
352 Donald A Howison VK2DXH
353 Harry Petrodaskalakis VK3ABO
354 B E C Lavender VK4LV

VHF CC
119 M T Deakin VK4DV (52 MHz)

[illegible]
170 M T Deakin VK4DV (52 MHz)

WAVKCA
1520 Rune Jedeman SM6AVM
1521 Ichiro Ishino JR3IIR
1522 Kazuo Ogawa JA1KWC
1523 Takashi Kato JH1BXH
1524 Harry Petrodaskalakis VK3ABO

VK1 AWARD

This award is issued by the WIA ACT Division, (upon receipt of a correctly presented application) to any licensed amateur operator or shortwave listener The certificate displays one of Canberra's most distinctive landmarks, the Telecom Tower, situated on Black Mountain in the heart of Australia's Capital City. The tower is depicted in light blue on a white background with award information in black lettering

The information required is a log extract showing date (UTC), time (UTC), mode, call sign of the VK1 station worked and ciphers exchanged. Shortwave listeners should include the station worked by the VK1 station being claimed.

Each VK1 call sign worked counts as one point. Each call sign may only be claimed once. The change of status to mobile, portable, etc, is not allowed as a separate contact. Contacts via terrestrial repeater systems are not valid contacts towards the award.

AWARD REQUIREMENTS

HF within VK (excluding VK9 and VK0)

Basic Award	20 points
Bronze Upgrade	50 points
Silver Upgrade	75 points
Gold Upgrade	100 points

HF outside VK (includes VK9 and VK0)

Basic Award	10 points
Silver Upgrade	25 points
Gold Upgrade	50 points

VHF and higher frequency requirements are the same as HF outside VK for all areas.

Cost of the Basic Award is $A3, each upgrade costs $A1, or two IRCs.

In an attempt to assist stations qualifying for the award, a VK1 Award Net operates each Sunday evening on 3.570 MHz, immediately following the VK1 Divisional WIA Broadcast The Award Net generally commences at approximately 1030 UTC.

Applications for the Award should be addressed to: The Award Manager, GPO Box 600, Canberra, ACT, 2601

WORKED ALL QUEENSLAND — VK4-[illegible] Award

This award is divided into two sections — Worked All Cities and Towns and Worked All Shires.

Any transmitting amateur or SWL may apply for the award, provided that these applications comply with the rules.

Only one award is issued, but this will be updated upon receipt of further additions.

WORKED ALL CITIES AND TOWNS

There are 22 incorporated Cities and Towns in Queensland

Brisbane	Logan
Bundaberg	Mackay
Cairns	Maryborough
Charters Towers	Mount Isa
Dalby	Redcliffe
Gladstone	Rockhampton
Gold Coast	Roma
Goondiwindi	Toowoomba
Gympie	Townsville
Hervey Bay	Warwick
Ipswich	Thuringowa

Initial Award: 15 contacts with radio amateurs operating from these Cities and Towns. A "silver sticker" if all Cities and Towns are worked.

[illegible] SHIRES

There are 112 Shires in Queensland. The population figures in these Shires range from 250 to [illegible]

Albert	Jericho
Allora	Johnstone
Aramac	Jondaryan
Arakun	Kilcoy
Atherton	Kilkivan
Burdekin	Kingaroy
Balonne	Kolan
Banana	Laidley
Barcaldine	Landsborough
Barcoo	Livingstone
Bauhinia	Longreach
Beaudesert	McKinlay
Belyando	Mareeba
Bendemere	Maroochy
Biggenden	Millmeran
Blackal	Mirani
Boonah	Miriam Vale
Booringa	Monto
Boulia	Moreton
Bowen	Mornington
Broadsound	Mount Morgan
Bulloo	Mulgrave
Bungil	Mundubbera
Burke	Murgon
Caboolture	Murilla
Calliope	Munweh
Cambooya	Nanago
Cardwell	Nebo
Carpentaria	Noosa
Chinchilla	Paroo
Clifton	Peak Downs
Cloncurry	Perry
Cook	Pine Rivers
Crows Nest	Pioneer
Croydon	Pittsworth
Dalrymple	Proserpine
Diamantina	Quilpie
Douglas	Redland
Duaringa	Richmond
Eacham	Rosalie
Eidsvold	Rosenthal
[illegible]	Sarina
[illegible]	Stanthorpe
Etheridge	Tambo
Fitzroy	Tara
Flinders	Taroom
Galton	Taro
Gayndah	Torres
Glengallan	Waggamba
Gooburrum	Wambo
Herberton	Warroo
Hinchinbrook	Widgee
Ilfracombe	Winton
Inglewood	Wondai
Isis	Woocoo
Isisford	Woongara

as from 1/1/1979

Initial Award: 51 contacts. "Stickers" for 61, 71, 81, 91, 101 Shires, with a gold sticker if all Shires have been contacted.

MODES AND BANDS: All legitimate modes and bands may be used — LF, HF, VHF, UHF, OSCAR, EME, etc — but cross-band modes are not allowed.

SPECIAL VK-RULE: As a number of areas are not very active, DXpeditions to these areas are encouraged. . to help the award hunter (and others) to attain that rare Queensland Shire, Town or City.

The following will apply:

A copy of the VK/P log shall be forwarded to the Queensland Awards Manager for use as a checklist.

The VK/P operator will automatically be credited with "as having worked" that particular area, if at least 20 different stations have been contacted from that location.

METHOD OF APPLICATION A certified list of contacts, as per CHC rules, to be sent to: The WIA(Q) Awards Manager, GPO Box 638, Brisbane, Qld. 4001 or J C Moulder VK4YX, Queensland Award Manager, PO Box 323, Warwick, Qld. 4370, with either $A2 or eight IRCs, or equivalent for the initial award Subsequent stickers will be issued free, although return postage would be appreciated.

Contacts made as from January 1, 1976 will be valid for this award with the exception of Arakun*, Mornington*, Hervey Bay Town and Logan City, contacts as from June 1, 1981

Queensland amateurs, as a matter of courtesy, should find out in what city, town, or shire, they reside and should include this information on their QSL cards.

(* Prior Shire offices permit of entry required as these Shires are restricted areas for radio transmissions)

WIA 75 AWARD RECIPIENTS — Update

CERTIFICATE No	NAME & CALL SIGN
695	Melkyanus M Jewangu YC0NOO
[illegible]	Benny Wyenantea YB3CN
[illegible]	Muda Lubis YC6XE
698	Roew ta YC0CAM
699	Rachim Ry YB0CAR

EDR 60 JUBILEE AWARD

During 1987, Experimenterende Danske Radioamatorer (EDR) is celebrating its 60th anniversary, and to commemorated the occasion the *EDR 60 Jubilee Award* is issued.

To claim the award you require 60 points, which are gained by working OZ stations in the period from January 1 to December 31 1987 Each OZ station counts as one point and club stations count as five points. All amateur bands and modes are allowed, but repeaters cannot be used. Special endorsements for CW, SSB, RTTY, one band, etc

Cost of the award is six IRCs and can be obtained by log extract certified by two licensed amateurs and post marked no later than January 31, 1988 to:

Allis Andersen OZ1ACB, Kagsaavej 34, DK-2730 Herlev, Denmark.

The awards, which will be printed when the deadline has ended, will be issued with numbers, and will be issued in order of which the applications have arrived

A list containing the call signs of club stations is available from the above address for a SAE and [illegible] IRC.

Contributed by Allis Andersen Awards Manager, EDR 60 Jubilee Award

USSR AMATEUR RADIO AWARDS

The Central Radio Club of the USSR has seven amateur radio awards regularly available to amateurs world-wide, who meet the qualifications for [illegible]

Probably the two most popular of these are the RAEM and the R-100-O Awards. A brief outline of the awards and full rules follow

The *RAEM Award* is one given for CW QSOs with Soviet amateur stations within the Arctic Circle and in Antarctica

The *R-100-O Award* is given for contacts with 100 or more of the 184 Soviet oblasts.

The *R-150-S Award* would most closely compare with the ARRL's DXCC: you must contact stations in 150 countries from the CRC's country list This same list is also used in the CRC's *CQ-M* contest for the countries multipliers.

The *W-100-U Award* does not have a close

counterpart award. The major requirement is to contact 100 Soviet amateurs on HF, the only restriction being these include five contacts in the UA9 call area.

The *R-15-R Award* could compare with the ARRL's WAS Award. You must make contact with each of the USSR's 15 Republics.

The *R-6-K Award* compares with the ARRL/ITU's WAC Award.

The *COSMOS Award* is essentially a two metre only award, so rules will not be published here. This award was established by the Radio Sport Federation of the USSR in 1961 on the occasion of the first flight into space by Youri Alekseevich Gagarin, a citizen of the USSR.

The RAEM Award — is given to radio amateurs and SWLs, who provide proof of CW QSOs (for SWLs, who provide proof of hearing CW QSOs) with Soviet radio amateurs who are located at QTHs at latitudes of 66 degrees 33 minutes north or greater (ie, within the Arctic Circle), or on the continent of Antarctica. A point count of at least 68 points or more must be obtained to qualify for the award.

The point count for each contact is determined like this:

15 points for contact with station RAEM
10 points for an Arctic Island or Antarctic contact
5 points for contact with any station between the Arctic Circle (Latitude 66 degrees 33 minutes north) and 70 degrees north.

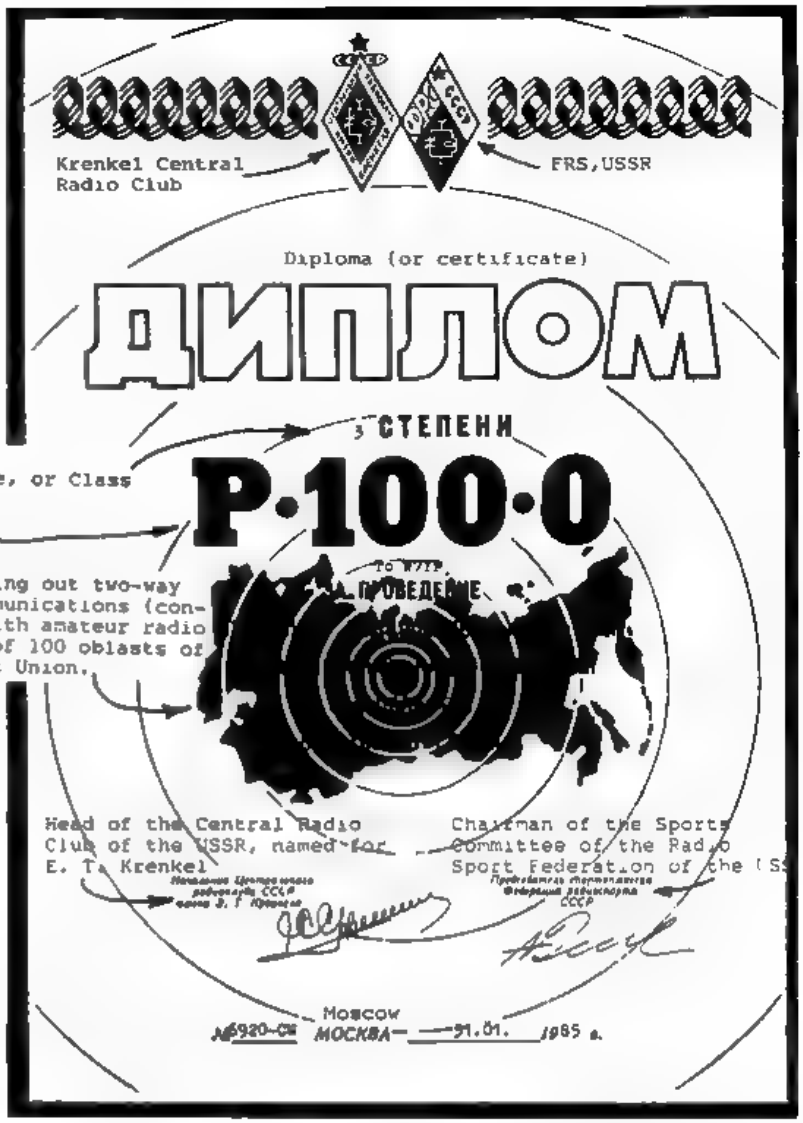
RAEM was Ernst Krenkel's amateur radio call sign, and Krenkel died in 1971.

Contacts before December 24, 1972 do not count for this award.

Some, but not all, RAEM-qualifying Russian QSLs will show the point count for the RAEM Award. Some QSLs even show "five points for RAEM" when, upon looking at a map of the Soviet Union, the QTH makes you think it would only qualify for two points.

To apply for this award you must make a list of contacts showing date, call, mode and band. QSL cards do not have to be submitted. To play safe, you should have your contacts list verified against your QSLs by two club officers of a recognised radio club. (This is not mandatory, just a safeguard). The CRC also require 14 IRCs to accompany each application. Post applications to the Central Radio Club, PO Box 88, Moscow, USSR.

Don't expect a fast turn-around time from the date of your award application mailing, even if you send it air-mail.



R-100-O — is issued to all licensed radio amateurs and SWLs who fulfill the following conditions.

It is necessary to carry out two-way contacts (observations) with the radio stations of 100 regions (oblasts) of the Soviet Union.

The award is available in three classes.
First Class — for two-way contacts (observations) on the 3.5 MHz band only.
Second Class — for two-way contacts (observations) on the 7 MHz band.
Third Class — for two-way contacts (observations on any amateur band.

All contact (observations) are to be made on CW or Phone only.

Minimum reports of RST 337 or RS 33.

All contact (observations) carried out after January 1, 1957 are valid.

Applications must include the list of contacts (observations) with date, call sign, type, frequency and be sent to Box 88, as above.

Cost of the award is 1 Rouble or 14 IRCs which covers the forwarding registered postal expenses.

R-150-S — to obtain the R-150-S it is necessary to carry out two-way contacts (observations) on one or any amateur bands with 150 countries of the world including 15 Union Republics of the USSR.

All contacts (observations) are to be made on CW or Phone only and are to have taken place after June 1, 1956 to be valid.

Minimum reports of RST 337 or RS 33.

Applications must include the list of contacts (observations) made with date, call signs, type of emission, frequencies and be sent to Box 88, etc.

Cost is the same as the R-100-O Award.

W-100-U — The W-100-U Award was established in 1959 on the occasion of the 100 anniversary of the birthday of A S Popov, the great Russian scientist — the inventor of radio.

It is necessary to contact/observe two-way contacts on one or any of the amateur bands (3.5, 7, 14, 21, and 28 MHz) with 100 different amateur radio stations in the USSR including five stations in the 9-region Contacts to be on or after January 1, 1959.

Basic rules as above.

R-15-R — amateurs/SWLs must contact 15 Union Republics on any amateur band (3.5, 7, 14, 21, and 28 MHz). The Republics are UA1, UN1, UW1, UA2, UA3, UW3, UV3, UA4, UW4, UA6, UA9, UV9, UA0, UW0; UC2; UP2, UQ2, UR2, UB5, UT5, UY5; UO5, UD6, UG6, UF6, UL7, UH8; UI8, UJ8, UM8.

Contacts on or after July 1, 1958 are valid

Basic rules as above

R-6-K — it is necessary to carry our 12 two-way contacts/observations on SSB, CW and Phone with radio amateurs in the following:

a Europe — one contact
b Africa — one contact
c North America — one contact
d South America — one contact
e Asia — one contact
f Oceania — one contact
g The European Part of the USSR (UA1, UN1, UW1, UA2, UC2, UP2, UQ2, UR2, UA3, UW3, UV3 UA4 UW4 UB5, UO5, UT5, UY5, UA6, UW6) — three contacts
h The Asiatic Part of the USSR (UD6, UG6, UF6, UL7, UH6, UI8, UJ8, UM8, UA9, UW9, UV9, UA0, UW0) — three contacts.

The award comprises three classes:
First Class — for two-way contacts/observations on the 3.5 MHz band only
Second Class — for two-way contacts/observations on the 7 MHz band only
Third Class — for two-way contacts/observations on any amateur bands
Contact on or after May 7, 1962 are valid
General rules as above.

—Compiled by Jack Wichels W7YF and contributed by Ken Stevens VK5QW

AUSTRALIAN DESIGNED AND MANUFACTURED

The IDASS queueing system, designed and manufactured in Australia, is microprocessor controlled providing automatic visual and voice direction for customers awaiting service in queues. Almost any kind of electronic visual display can be used while the voice is of high quality being derived directly from female or male voice recordings which have been digitised. Of particular interest is the application of voice control by a microprocessor. The system was designed originally for a well-known Australian bank. Several systems are installed and have proved to be very successful in improving customer service and easing staff pressure during busy periods.

Applications are expected in many fields including telecommunications, banking and finance, transport and the public service.

For further information please contact Zenology Pty Ltd, Suite 1, First Floor, 245 Springvale Road, Glen Waverley, Vic. 3150. Phone (03) 233 5764.

LAND MOBILE RADIO CHANNEL

Using the latest packet radio techniques, together with error correction/detection, the DR 9600 Radio Modem provides reliable data communications over the standard land mobile radio channel. Efficient carrier sensing allows co-existence of data and voice on the same channel. This high speed operation is possible due to a state-of-the-art modem designed for use in the radio environment. Data encryption is standard.

Terminal equipment connecting to the DR 9600 sees a normal RS-232C modem port with handshaking DTS/CTS and XON-XOFF. Models are available with a five port multiplexer. Software allows 256 separate systems on the one channel. The advanced error detection and correction techniques operate automatically and transparently to the user to ensure "hassle-free" data integrity. The combination of the DR 9600's modem and advanced software results in a BER of $1*10^{-11}$

For further information please contact Zenology Pty Ltd, Suite 1, First Floor, 245 Springvale Road, Glen Waverley, Vic. 3150. Phone (03) 233 5764.

AMSAT Australia

NATIONAL CO-ORDINATOR
Graham Ratcliff VK5AGR
INFORMATION NETS
AMSAT AUSTRALIA
Control: VK5AGR
Amateur Check-In: 0945 UTC Sunday
Bulletins Commence 1000 UTC
Primary Frequency: 3.685 MHz
Secondary Frequency: 7.064 MHz
AMSAT SOUTH WEST PACIFIC
Control: John Browning W6SP
Bulletins Commence: 2200 UTC Saturday
Frequency: 14.282 MHz

Participating stations and listeners are able to obtain basic orbital data, including Keplerian Elements from the AMSAT Australia Net. This information is also included in some WIA Divisional Broadcasts.

SATELLITE ACTIVITY FOR THE MONTH OF DECEMBER 1986

1. LAUNCHES

The following launching announcements have been received:

INTL NO —1986	SATELLITE	DATE	NATIO-N	PERIOD min	APG km	PRG km	INCL deg
094A	Cosmos 1803	Dec 02	USSR	116.0	1527	1502	82.6
095A	Cosmos 1804	Dec 04	USSR	90.8	448	210	70.9
096A	USA 20	Dec 05	USA	1436.3	...460	35328	5.3
097A	Cosmos 1805	Dec 10	USSR	97.8	6	642	82.5
098A	Cosmos 1806	Dec 12	USSR	11hr48m	39367	612	63.0
099A	Cosmos 1807	Dec 16	USSR	89.6	978	177	67.1
100A	Cosmos 1808	Dec 17	USSR	105.0	133	995	81
101A	Cosmos 1809	Dec 18	USSR	104.1	964	944	82.5
102A	Cosmos 1810	Dec 26	USSR	89.1	302	189	65.0
103A	Molniya 1-70	Dec 26	USSR	1hr 41min	39075	484	63.0

During the period 78 objects decayed including the following satellites:

1975-126A	Molniya 3-4	Aug 12
1985-034B	NUSAT 1	Dec 15
1986-025A	Cosmos 1737	Dec 03
1985-095A	Cosmos 1804	Dec 18

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MFJ 959 Active Antenna matcher for SWLs	**$449**	+ $18 p&p
MFJ 1701 6 position coaxial switch	**$154**	+ $10 p&p
MFJ 1702 2 position coaxial switch	**$99**	+ $10 p&p
MFJ-1224 CW/RTTY computer interface	**$495**	+ $18 p&p

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TECHNICAL MAILBOX

INPUT TO THE MAILBOX

Last September, we introduced this column to AR and it was not long before we received a flood of mail. Well, you all must have had a good Christmas break because the flood has all but dried up! How about some input from you, the readers, to keep it going? Initially we did say that we preferred not to become too involved with "nuts and bolts" type fault fixing of specific commercial equipment, but we would still like to hear from you on such faults that *you have encountered and fixed!!!*

Your problem is quite possibly being experienced by someone else!

RF INTERACTION TO PREAMPLIFIERS

VK5... Stirling

"I am interested in using my tower for a folded monopole vertical antenna. Will any damage occur to the VHF/UHF preamplifiers and coaxial relays already mounted on, and earthed to the tower?"

Firstly, you will have figured out how you are going to feed the tower and, as such, you will have come to the conclusion that, depending upon the height of the tower and just what antennas you have on the tower, "top hat" capacity will significantly effect the electrical length of the tower. This will require careful consideration and probably a lot of experimentation to obtain a suitable match. Multi-band operation will further compound the problem. Maybe this is the reason why so many opt for inverted Vees.

Now, the question of pre-amplifier damage. "Very unlikely" is the short answer, but this will depend upon the type of preamplifier you are using. Most incorporate relay switching (activated by a RF detection circuit and/or a PTT key line), as well as diode protection. Some are capable of through- put powers of up to 100 watts.

Two years ago I had the opportunity to check the noise figure (NF) of several, under laboratory conditions, using the HP automatic noise meter, of several commonly available preamplifiers. I was disgusted that the claimed noise figures did not come within a "bulls roar" of their quoted figures. Initially, I thought I had a nonachiever and obtained a second, ...and a third! Very little difference. Why? I knew why as soon as I looked at the circuit configuration and RF protection used. What really irritates me is the false noise figure claims of 0.8 or 1.2 dB, when, in fact, the two types in question gave (at best) 2.9 and 5.4 dB respectively.

The increase in gain provided by the preamplifier, as seen on the S-meter (if you have one!), may lull the newcomer into thinking all is well. Maybe, but chances are that the box was as deaf as a post in the first place and did provide an increase in noise plus signal, BUT far from the performance that should be obtained if the manufacturers claims were true.

Assuming you did have a genuine 0.8 dB NF, then your receiver sensitivity, in degrees Kelvin, would be about 58. But if, in fact, the NF was 5 dB then this would have jumped to about 625. What this really means is, that on 144 MHz, when beaming at the horizon, the antenna temperature (ground temperature) is about 270 degrees Kelvin and, as such, your 625 L preamplifier will prevent you from getting down to the noise floor.

If you are into satellites and elevate your array, the degradation is even more profound. It becomes even more dramatic if you relate this to 432 MHz!!!

Could this be the reason for not hearing all that DX being worked by the other chap — and you had put this down to his better QTH? ? ?

Relays used in most of these preamplifiers will provide sufficient isolation between the antenna and the preamplifier input, when turned off, to be adequate for our power levels. Most have protection diodes as well. This should be adequate to prevent failure of your preamplifier when operating on HF. I do not feel that the voltages generated into your VHF/UHF antennas will cause a failure. However, I would be reluctant to advise operating both at the same time should you run a linear of reasonable power. With respect to the relays themselves. A possibility may exist (remote that it should be) that the RF sense circuit could detect the HF signal and turn off the preamplifier. However, if you [redacted] the preamplifier turned off in the first place, such an event would not take place. Moreover, if it did, it would in fact, offer added protection if you can follow that logic.

You certainly can rest easy that the relays will not be damaged.

There is no way to obtain receiver sensitivity easily if you are seriously into VHF/UHF. With the latest devices available you can realise NFs that a few years ago would be unheard of in amateur circles. In fact, it is timely to relate that my latest preamplifier for 432 MHz returns a NF of 0.28 dB (2SK571) which is a lower limit than I can utilise with my antennas.

It is paramount that the preamplifier be mounted as near as possible to the feed as feedline loss will be added to the preamplifier NF. It should be isolated from the transmitter generally with two high quality relays to handle the transmitter power; eg TRANSCO, and the second to provide the isolation; eg DOWKEY with G option.

The preamplifier must also be terminated at the feed impedance during transmit and, do NOT short the input. Feed the preamplifier output via another coax back to the shack.

The relay sequence should then allow the preamplifier to be terminated when not in use. The antenna is connected to the RF amplifier output (linear). Turning the "system on" will activate the "preamplifier relay" on removing the termination and connecting the antenna to the preamplifier input. It is best to be able to interrupt this line (via a press button) to terminate the preamplifier for comparative noise measurements when required.

When going to transmit the key line for your change over will disconnect the "preamplifier relay" (termination connected), activate the "transmit antenna relay" and finally, allowing the linear to be activated.

All sequences should be inter-locked with delays commensurate with the operate times of the respective relays. You may utilise the supplementary switching contacts if they are provided on the relays.

You cannot realise results without doing it right and, believe me, there is no easy shortcut. Why invest in a device that will provide a very low NF only to protect it with NF negating diodes and lossy relays? Many manufacturers do! Conversely, if you do not protect it correctly it will surely fail.

Candidly, loading the tower for HF operation, when you have it bristling with HG, VHF or UHF antennas, I believe is just not worth the effort. I have found that any advantage obtained through a lower radiation angle of a vertical radiator on the lower HF bands is negated by the increase in noise to which they are susceptible. Conversely, if you simply do not have the room for inverted Vees or a multi-band dipole then maybe you have little [redacted]

—

Magazine Review

Roy Hartkopf VK3AOH
34 Toolangi Road, Alphington, Vic. 3067

G General C Constructional P Practical without detailed constructional information T Theoretical N Of particular interest to the Novice X Computer program

***HAM RADIO* December 1986.** Cumulative Index, 1982- 1986 (G). CW Processor (T P). FSK Analysis (T X).

***WORLDRADIO* November 1986.** General news of amateur radio activity, DX, new antennas and other products, maritime mobile, etc (G)

***CQ* December 1986.** 813 Linear Amplifier (P). Paddle and Keyer Notes (G). 160 metre Vertical (P). Antenna Problems (N)

***THE SHORT WAVE MAGAZINE* December 1986.** Capacitor Values (G). Dangerous Oil Filled Components (G N). Antenna Feed Point (P N).

***RADIO COMMUNICATION* February 1987.** Switched Capacitor Filters (P).

***73 MAGAZINE* December 1986.** Modifying Wafer Rotary Switches (P). Switched Capacitor Filter using ICs (P) 1986 Index.

***QST* January 1987.** Accurate SWR and Watt Meter (C). Building a 180 foot Tower (G).

***VHF COMMUNICATIONS* Autumn 1986.** Microstrip Transverters for 23 and 13 cm (C). VHF to SHF Bandpass Filters (P).

er

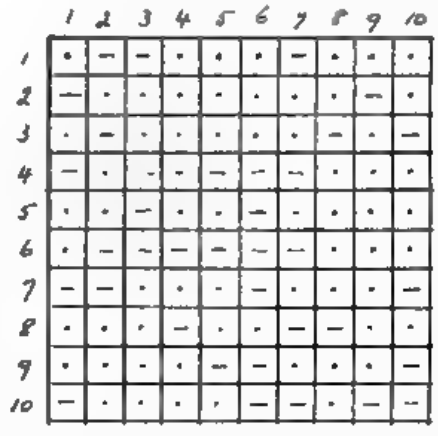
CORRECTION

Square Wave Generator — Part One
November 1986, AR

Page 10, Figure 4 — Voltage Controlled Oscillator — Board 1.

The capacitor in the loop filter between pins 9 and 13 of IC14 (4046) is shown as 2.2 nF. It should be 2.2 uF. The incorrect value will result in loop stability problems.

MORSEWORD 1 SOLUTION



Across: 1 peas 2 dive 3 left 4 cos 5 erase 6 Amos 7 gust 8 stead 9 split 10 bay

Down: 1 arena 2 kapi 3 does 4 hare 5 stain 6 stow 7 tick 8 eased 9 asset 10 easy

VK2 Mini-Bulletin

Tim Mills VK2ZTM
VK2 MINI BULLETIN EDITOR
Box 1066, Parramatta, NSW 2150

THIS COMING YEAR

As these notes were being compiled in mid-February, the closing date for the March AGM Agenda and Council Elections was but a few days away. At that stage, there were no submissions for either subject. Perhaps by the time the closing date arrived something had come in the mail.

A reminder that the next Conference of Clubs will be hosted during April (11-12) by the Fisher's Ghost ARC. Federal agenda items will be discussed at the Conference.

Would all affiliated clubs keep their information sheets for the Division up to date. A listing of currently affiliated clubs will appear in a later issue of these notes. Would repeater groups note that, by now, you should have received a request to provide the annual update for your listing in the Call Book from the Federal Office. Please process and return without delay to FTAC, c/- PO Box 300, Caulfield South, Vic. 3162.

While on the subject of the next Call Book, if the present listing is incorrect or changes need to occur for the next issue, would you also send a copy of any notification sent to DOC to the Call Book Editor, at PO Box 300, Caulfield South, Vic. 3162. Alternatively, you may ring or call at the Divisional Office, 109 Wigram Street, Parramatta, with the details. Phone (02) 689 2417 11 am to 2 pm weekdays or 7 to 9 pm Wednesdays. The entries for the next Call Book close about mid-year, but do it now! We ask that you let others know if you hear on-air discussions, etc, that their entries in the current book are wrong. The drop-copy to the Editor helps provide a cross reference to DOC listings. Members listings are the same as the AR address label unless you have notified otherwise. Station addresses may differ if you use a post box, as there is nothing to provide a correction.

WICEN

It has been decided that the interests of WICEN and the Division would be best served by WICEN seeking incorporation under the provisions of the Unincorporated Associations Act (1984). In meetings between the Council and WICEN Committee, a charter, objects and guidelines were developed and agreed. A meeting of WICEN membership was held at Parramatta on February 14, and voted unanimously to adopt the charter, objects, articles and guidelines. This is now underway, but approval will take some months with the backlog in Corporate Affairs.

Apart from the protection to the members of WICEN that incorporate will provide, there is little outward change to the operation of WICEN. The charter and objects request WICEN to continue to develop and provide the WICEN role in New South Wales on behalf on the NSW Division. After incorporation, the registered name is WICEN (NSW) Incorporated, or (inc).

During this transition period there is the need to revise the membership register. Over the past 10 years, there has been a number who have been in WICEN, but have let their membership lapse. If they would like to renew before incorporation is finalised or there are new members wishing to join, the 1987 fees are $5. This should be sent to 'WICEN Treasurer', PO Box 123, St Leonards, NSW. 2065. An information leaflet may be obtained from the above address or the Parramatta Office. Affiliated clubs have also been sent this information so you may inquire from them.

If you were a WICEN member and have some identification equipment — helmet, badges, etc — but do not intend to renew, would you please make arrangements to return these items.

Further WICEN information is given on the Thursday evening net at 8.30 pm on Sydney repeaters 7150/8275. The Divisional Broadcasts also contain a regular segment.

NEW MEMBERS

A warm welcome is extended to the following new members who were in the February intake.

H D Davies	VK2LY	Denistone
D R Day	VK2DFD	Dural
M A Fitzalan	VK2EMA	Tottenham
J P Hvass	VK2ECF	Rockdale
G P Inwood	VK2XEX	Lane Cove
A H Langham	VK2MAL/XDO	West Pymble
W H G Metcalfe	VK2EZA	Cambridge Gardens
A H Pickford	VK2EF	Avalon Beach
W Rogan	Assoc	Drummoyne
G J Schneider	VK2FDW	Glendale

Five-Eighth Wave

Jennifer Warrington VK5ANW
59 Albert Street, Clarence Gardens, SA, 5039

WHERE ARE THEY NOW?

You will remember that in January's *Five-Eighth Wave*, I wrote about the history of the Mount Gambier High School Radio Club, and wondered if any of those young men gained their licenses, and where they are now? (I was unaware, at the time of writing that the photographs I was describing had been published in AR, May 1985). However, since then, I have received a very interesting letter from Bob Krummel VK3BD, (ex-ZT1F 1933-35, and VK6BK 1947-49) who was one of those in the Club. It would appear that only Bob and John Heaver VK3XEH, obtained their licenses.

After the photograph was published in AR, Bob contacted John and they renewed their former acquaintance. Then, with the help of Joyce and Ross Haig, old school friends of Bob's still living in the Mount Gambier area, they set about discovering the whereabouts of the others.

Unfortunately, six of these are deceased. They are Gilbert Saville, Noel Fredericks, Rex Sullivan, Ken Crafter, Harold Brown and Arthur Simms. Michael O'Neil is in a home for elderly citizens at the Mount, Glen O'Shaughnessy lives at Moana Beach and Lloyd Orchard was Editor of the Naracoorte newspaper until his retirement in 1985.

So, there it is, and my grateful thanks to Bob for taking the trouble to provide the information.

COUNCIL NOMINATIONS

In this issue of AR, VK5 members will find, in their SA Journal, either a voting sheet on which there is a list of nominees to Council, or, if there were not more than the required number nominated, a list of your new members of Council. I hope that there will be a vote as this gives you some measure of say over those who run YOUR organisation. If you don't like what we are doing then we could all be out of a job by May! However, if you think that this is rather a drastic approach, but you still aren't happy with some aspects of the organisation, there are other avenues open to you.

If you are a member of a club, is your club representative going to be present at the Clubs' Convention? Did you submit an agenda item for either the local or Federal Conventions, or have you voiced your opinion on items that are already going to be discussed? Even if you are not a member of a club, you can voice your opinion either by writing to Rowland VK5OU, your Federal Councillor, or to Council as a whole. Better still, you could have nominated for Council. It may be too late for some of these courses of action, but bear them in mind for next year.

As well as Graham VK5AGR, whom I mentioned in last month's column, we shall also be losing part of the services of John VK5PJG, from Council. John joined us in 1983 and has held the positions of Minutes Secretary, Building Supervisor, Education Officer and Publications Officer. Although John is retiring from Council he will be continuing as Publications Officer.

I would like to thank John for the time and effort he has put into his years on Council. I am sure the 'quiet achiever' will be missed by us all.

CONGRATULATIONS. . .

. . . to Steve Mahony VK5AM (our Disposals Officer), of Elizabeth Downs, and Sue Coccetti (nee Jackson), of Craigmore, on the occasion of their forthcoming wedding. Our very best wishes to you both.

DIARY DATES

April 24-26 Clubs' Convention Weekend (visitors are welcome to attend, particularly at the Saturday sessions, however, we do ask that you contact Don VK5ADD beforehand, so that we have an idea of numbers, particularly if you require meals, for which a small charge will be made).

Tuesday, April 28 Annual General Meeting, 7.45 pm.

1150 AWARD CERTIFICATES

Correction & Additions

980 9M1MC should be first Nepal
1028 should be VK5NAV, not VK5NAM.

New Awards

1087	VK5ALO*	1088	M Stippschild SWL
1089	LA3OU	1090	EA1CPE

1091	DU1UJ	1092	FE8QP
1093	F8JR	1094	4S7EA[1]
1095	4O0IL	1096	4Z4K
1097	YO2DHI	1098	TI2JJP[2]
1099	VU2EN	1100	HZ1826[3]
1101	VU2SMN	1102	YC1HKH
1103	YC4FRX	1104	YC7BBI
1105	YB3CN	1106	VS6UN[4]
1107	VS6UA	1108	9K2YA[5]
1109	G3BWN	1110	G0EGE
1111	G4VBH	1112	DL8OC
1113	G4DXG	1114	G0DVY
1115	G4XAQ	1116	VU2LAM
1117	OE8CAG	1118	JR8JSI
1119	JI2FAP	1120	VU2UR
1121	G3WKG	1122	V85TV
1123	G4FRV	1124	YB0AF
1125	VK2NSE	1126	VK8NGP
1128	VK5BWR	1129	VK2CWS
1130	VK5AWA	1131	VK2EJH
1132	VK5ZRT	1133	VK5NWL
1134	VK5AHJ	1135	VK5AS
1136	VK8OD	1137	VK5PWK
1138	JF6ITM	1139	JD1DEL
1140	JM1XCW	1141	JA1RBQ
1142	VK5ADR	1143	VK5LV
1144	VK5BOY	1145	VK0DA[6]
1146	NU0A	1147	YB4FNN
1148	ZC4NL[7]	1149	P29FS
1150	VK0TW[8]	1151	VK5PWF
1152	VK5AGW[9]	1153	VK2ESW/5
1154	VK5KMJ	1157	WB6WQA
1159	VK5ACK	1160	VK5KAS
1161	VK3PMH	1165	VK6AEA
1167	VK4NYE	1168	VK4BWG
1170	VK5NXB	1173	VK5NMJ
1174	VK4FQW	1175	VK2DJW
1176	VK2ASZ	1177	VK2VFL
1178	VK5SS	1179	VK2IU
1180	VK4VGY	1183	GW0FEU
1186	YC0LJS	1187	W6BF
1188	TR8CA[9]	1189	5V7SA[10]
1204	K5IQ /N5GXE[11]		

* Home Call Sign SM0KAK

1. 1st Sri Lanka
2. 1st Costa Rica
3. 1st Saudi Arabian SWL
4. 1st Hong Kong
5. 1st Kuwait
6. 1st Heard Island
7. 1st Cyprus
8. 1st All 70 cm
9. 1st Gabon
10. 1st Togo
11. 1st Combined husband and wife certificate

VK3 WIA Notes

Jim Linton VK3PC
IMMEDIATE PAST-PRESIDENT
WIA VICTORIAN DIVISION
412 Brunswick Street, Fitzroy, Vic. 3065

NEW MEMBERS

The following members are welcomed to the VK3 Division.

Geoffrey Clarke VK3ARP, Scott Coleman, Stephen Cox, Allan Davies, Richard Everett VK3XRO, L Greaves VK3BGM, Michael Hewitt, Kevin Hickman VK3CBT, M F King, Jozef Kozka, Ian Marsh VK3PLL, L R Martin VK3BLM, D A Nisbet VK3XDA, F R Richards, Robert Robinson VK3VZR, Donald Shand VK3DZM, M C Swinton VK3BRE, and James Tregellas VK3XJT

EXAM DEVOLVEMENT

The Council of the Victorian Division has carefully considered the draft accreditation package on examination devolvement issued by the Department of Communications.

In so doing, it solicited comments from radio amateurs and clubs within Victoria, conducted an open forum, and analysed responses to the package made by other WIA Divisions.

The Council noted that:

a The Department has issued a *Draft* document which indicates DOC's intention to devolve some or all of its examination function related to the Amateur Radio Service.
b The Department has sought comment on the document with regard to its proposed method and requirements for accreditation, prior to the finalisation of the document wording.
c The Department has sought an *indication* only of interest in accreditation.
d No formal proposal on any aspects of the examination function or process has been made by the Department to this time.
e There is no suggested basis for organisational, procedural or financial arrangements in the draft document.

And the Council recognises that views given in response to a draft document will assist the Department in the framing of a proposal to accredit an organisation or organisations at some future time.

The Council held a special meeting to determine its response to the draft document, which was also attended by the Division's Education Officer, Fred Swainston VK3DAC, and Immediate Past President, Jim Linton VK3PC.

INTERIM POLICY

An interim policy was formed keeping in mind the absence of any formal criteria — in other words, a firm devolvement proposal from DOC at this time.

Based on a number of assumptions that had to be made, Council resolved that, if the Department devolve its examinations function:

1 The WIA be the sole accredited organisation to administer and distribute examinations.
2 The Department retain its responsibility for setting the examination paper and retain and maintain the question bank.
3 In the best interests of the Amateur Radio Service, the Victorian Divisional Council recommends that, if the Wireless Institute of Australia becomes the sole accredited body for the whole or part of the examination process, it seeks a substantial financial subsidy from the Department.
4 The Wireless Institute of Australia, as the organisation recognised as representing the interests of the Amateur Radio Service, be involved to the *exclusion* of all others or not at all!
5 And, if the Victorian Division be involved in any way, then that involvement shall be without the use of voluntary labour and shall be on a full cost recovery basis.
6 Due to the absence of a firm proposal from the Department on devolvement the Victorian Division has *unresolved* doubts concerning its implementation.

WHERE TO NOW?

As stated, the Division has an interim policy, and anxiously awaits further information from the Department, input from individuals or clubs, and debate on the issue at the WIA Federal Convention next month.

REVIEW OF FINANCE AND OPERATIONS

The Council is continuing to review the financial operations are carried out in the Division, its costs and financial allocation, and budgetary control [illegible].

In the latest moves, changes to the operation and policies relating to the Inwards QSL Bureau are now in force.

Council resolved that, owing to the high and ever-increasing costs of operation of this service, several changes would be made:

1 ***Amateurs currently registered with the [illegible] and those registering in the future with an established credit balance.***
At the present time, whenever cards are mailed, your balance is debited with eight cents to cover handling and packaging. Also, to offset costs of honorariums paid to the bureau managers.
This charge will be increased to 25 cents. If cards for more than one person are mailed to the same address, the 25 cent charge will be made in respect of each recipient and debited to the addressee's account.
2 ***Country members of the WIA (Victorian Division)***
It is no longer equitable that mailing of cards be on a "no cost" basis. Country members will be required to share the operational costs of the bureau with Metropolitan members.
Country members may arrange to collect cards from Zone Secretaries or they may *register individually with the bureau* and pay for postage and handling costs at the same rate as Metropolitan members.
3 ***Clubs (including country) and Zones***
All Clubs and Zones will be required to pay their own mailing costs, plus the 25 cents handling charge (chargeable on a single bulk posting). A credit balance should be established with the bureau for this purpose.
Clubs and Zones should provide current lists of persons requiring services to the bureau.
Cards may be collected from the bureau by arrangement with Barbara Gray.
Clubs and Zones who wish to register *non-WIA members* will be required to pay a *levy of $2* for each person so registered. This levy is payable in advance and will cover one calendar year from January 1 to December 31, or part thereof.
4 ***Non-WIA members who do not receive cards through clubs or zones***
a) Non-WIA members may register with the bureau in the same manner as members, and pay the same mailing and handling charges.
b) Cards *can be sorted* and made available for personal collection by payment of $2 annually to the bureau as in paragraph 3. Collection will be made from 412 Brunswick Street, Fitzroy, or from the bureau by prior arrangement with Barbara Gray.
5 ***Person collection of cards***
WIA members may register with the bureau and collect cards (sorted) from 412 Brunswick Street, Fitzroy, or direct from the bureau by prior arrangement with Barbara Gray — *at no charge*.
6 ***Uncollected cards***
Cards for amateurs not registered with the bureau
All cards not collected or directly mailed to clubs or individuals will be forwarded to 412 Brunswick Street, Fitzroy, where they will be held for collection for a period of six months. Collection may be made by arrangement, or between 10.00 am and 3.00 pm on weekdays (excluding Public Holidays). These cards *will not be sorted*.

HOW TO REGISTER WITH THE INWARDS QSL BUREAU

FOR DIRECT MAILING
CLUBS AND ZONES
Forward a list of names and call signs and mailing address to the bureau of members requiring service. Enclose *cash or cheque* to cover mailing and handling costs for period required, and $2 levy in respect to each non- WIA member registered.

PRIVATE AMATEURS (both WIA members and non-WIA members) REQUIRING MAILING SERVICE
Forward name, call sign and mailing address to the bureau, together with *cash or cheque* to cover mailing and handling costs for required period.

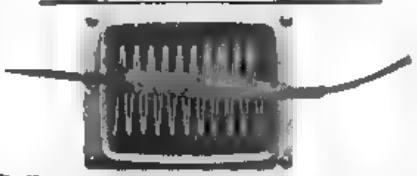
PERSONAL COLLECTION (sorted cards)
Forward name and call sign to the bureau. Non-WIA members should forward cash or cheque for [illegible]

Cards will be made available at 412 Brunswick Street for collection unless alternative arrangement is made with Barbara Gray.

ADDRESS FOR ALL INWARDS BUREAU CORRESPONDENCE

Inwards QSL Manager, Barbara Gray, 1 Amery Street, Ashburton, Vic. 3147

LOCUS TECHNICAL



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VK4 WIA Notes

Bud Pounsett VK4QY
Box 638, GPO, Brisbane, Qld. 4001

1986-87 DIVISIONAL PRESIDENT'S REPORT
Submitted at the 1987 Annual General Meeting of the Wireless Institute of Australia, Queensland Division
February 20, 1987

1986 has been a year of many changes and innovations. We have seen new modes of transmission become more popular and new ideas concerning amateur spectrum usage. Those of us who use satellite communication have witnessed the near loss of an old mate, OSCAR-10, and the launch of JAS-1, the latest offering from the JARL.

Sadly, 1986 has also witnessed the passing of some of our friends and acquaintances in amateur radio, who became silent keys. It is indeed sad to lose some of the pioneers of this hobby of ours which has become a service to the community.

This past year, the VK4 Division has seen the retirement from a number of voluntary positions, for a well-earned rest, of some of the Officers of the Division and the recruiting of "new blood" by their replacement volunteers.

QSL BUREAU

Throughout the year, the Bureau has had a steady flow of cards, both into and out of the Division. A perennial problem is non-collection of cards by amateurs. Over the years, many cards have accumulated in the Bureau, which has caused much concern to the Council. In this past year, a very successful program was carried out, with the co-operation of the News and Information Service, involving lists of unclaimed cards being read over the news broadcasts on a regular basis. This found many of the untraceable owners and cleared quite a backlog.

In November, the Council regretfully accepted the resignations of the Inwards QSL Bureau team who, after five years of toiling at the job, decided to take a well-earned rest and to pass on the experience to new volunteers. Almost immediately, the position was filled by Bill Dalgleish VK4UB, the current Outwards QSL Manager, who will be assisted in the job by volunteers from the Redcliffe and North Brisbane areas. Many thanks to Murray Kelly VK4AOK, and welcome to Council.

WICEN

In May, a new WICEN policy was adopted which has assisted in improving liaison between WICEN and the SES, by ensuring an active communication between the two bodies and a constructive interchange of ideas and information. Although this policy has yet to be adopted fully in all regions, the first few months of operation has resulted in many improvements in, what has been until now, some of the major problem areas of effective communications.

In line with this new policy, WICEN members in the Gold Coast and Redcliffe areas have joined the SES as wardens to co-ordinate damage control operations. Perhaps a system like this would prove beneficial in your area.

A document known as *WICEN in a Nutshell* was produced in July, which details information concerning WICEN for the information of non-WICEN members and other interested persons and has been very successful.

Amongst many activities that took place in VK4, WICEN was selected to provide much of the communications between the checkpoints for the Inaugural UNICEF *Earth Run* in November.

NEWS AND INFORMATION SERVICE

As usual, over the past 12 months, the News and Information Service has provided the amateurs of Queensland with what has been arguably one of the best services in VK. Bonnie has become one of the best known non-amateurs on the airwaves which led to a pleasant surprise in December, when she was awarded a plaque from the Redcliffe Amateur Radio Club in appreciation of her efforts.

Bud Pounsett VK4QY, as Editor, has provided the Division's members throughout the State with a variety of information relating to amateur affairs so that all amateurs in VK4 can be kept abreast of developments affecting us all.

The broadcast team, headed by Jack Gayton VK4AGY, has carried out a sterling task to ensure that this broadcast is heard on as many bands and in as many modes as possible.

In December, Jack Gayton VK4AGY, accepted the position of QTC Editor to alleviate some of the workload of promulgating information throughout the Division.

Council's policy over the years has been, for our weekly news service, to be as informative as possible.

QTC is for hard-copy items of purely VK4 interest and AR is to be used where information is to e presented to amateurs throughout Australia.

SERVICE LIAISON

During 1986, a number of repeater applications were handled by QTAC, including applications from the Gympie Amateur Radio Club, the South-East Queensland Amateur Television Group, the Gladstone Amateur Radio Club, the Chinchilla Amateur Radio Club and numerous others. It appears that VHF and UHF are alive and well in VK4.

To enable good co-ordination between amateurs and the DOC (who make the ultimate decisions), would all groups please inform QTAC fairly early of any ideas, vague plans and aspirations, so that we may assist your project. How can we help you to be licensed if we don't know of your existence?

EDUCATION

Following allusions by senior members of DOC at the Federal Convention in May, that the DOC may eventually release itself of the burden of conducting examinations in the future, Ron Smith VK4AGS, prepared a questionnaire. This was circulated in September, to determine the feasibility of a suggestion that the WIA accept the responsibility of conducting examinations, should the DOC cease conducting examinations. This information was used by a committee investigating the matter in a document which has been sent to the Federal Office to assist in their deliberations on the matter. The conclusions reached in VK4 were that the WIA should accept this responsibility so that adequate standards will be retained and not abandon our role in educating present and future amateurs. The report concluded with the sentiment that we should "blow our blinkers off" and really develop the Amateur Radio Service.

INTRUDER WATCH SERVICE

Some problems were noted in the last year with illegal operation on 10 metres by taxis in Hong Kong which have been passed on to the DOC.

Once again, the diligence of those amateurs participating in the Intruder Watch Service by submitting logs of intruders has made VK4 one of the most active Divisions in this matter. My personal congratulations to those of you who dedicated your time to preserve our bands.

BOOKSHOP

The Bookshop has been active this year and, despite the relatively low value of the Australian Dollar, has managed to show a respectable profit. This was due to the efforts of the Bookshop manager, Anne Minter VK4KZX, who was also awarded a plaque by the Redcliffe Amateur Radio Club in December, in appreciation of her work.

Throughout the year, the Bookshop visited the Sunshine Coast Amateur Radio Club, the Redcliffe Amateur Radio Club, the BARCfest, the Gympie Goldfest and the Gold Coast Hamfest, as well as regular attendance at the Divisional General Meetings.

RADIO CLUB CONFERENCE

April saw the staging of the 11th Radio Club Conference, held at the Griffith University.

Despite some serious last-minute problems with the accommodation, and with the social gathering on Saturday night, most attending delegates agreed that the Conference was a success.

This year, many of the State motions concerned the RCC itself, and, after much deliberation, and some discussion, a consensus was reached that, although some re-organisation is required in some form or another, the Conference must continue in future.

A committee set up by the Council found that, due to a lack of volunteers and a lack of major difficulties within the hobby, there would be no Conference in 1987, but that a Conference must be held in 1988, possibly hosted by a regional club or branch. Negotiations are currently being held with the CQ Branch.

HISTORIAN

Alan Shawsmith VK4SS, has completed a major project recently in a book known as *Halcyon Days*, a history of amateur radio in VK4. Whilst concentrating on the 1930s, it also covers from the turn of the century to after the last war. At this time, Alan is seeking a publisher and the Division will be providing sufficient finance to ensure publication.

DIVISIONAL CONSTITUTION

During 1986, the Constitution of the WIA(Q) has come under scrutiny by a committee consisting of Norm Wilson VK4NP, Laurie Blagborough VK4ZGL, Peter Brown VK4PJ, and Divisional Councillors. This was to bring the Constitution up-to-date and tie up any loose ends present after 25 years since the last review. The review is still proceeding, as a task of this nature must not be entered into lightly.

1986 will be remembered by the Gympie Amateur Radio Club as the year that their inaugural and highly successful Goldfest was held in September.

During this year, many Divisional Officers and myself, have endeavoured to visit as many clubs and groups as possible and will contrive to maintain liaison with clubs and individuals as often as possible.

The upcoming year promises to be an extremely busy year for the Institute as a whole.

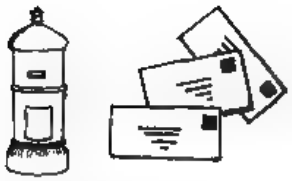
Preparations are being made to relieve the DOC of the burden of examinations, which will provide more active participation by the Institute in the future of amateur radio in VK. The challenge to affiliated clubs and the Institute to assist in examining amateurs will be met, but will provide some headaches in 1987/88.

This Division is actively working towards representation in the 1988 EXPO to be staged in Brisbane, to promote amateur radio, but effective representation at an amateur price will keep next years Council active.

Finally, I would like to take this opportunity to thank all the volunteers and especially the families of those volunteers who have assisted, yet again, to steer the VK4 Division so successfully through yet another 12 months.

I will repeat the message included in the response to the DOC submission concerning accreditation of clubs in the examination fields by asking our membership to "blow off our blinkers", look ahead and get on with the task at hand — to enjoy being involved in our hobby.

Signed David Jerome VK4YAN
Divisional President
ar



Over to You!

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.

EXAMS AND BLACK BOXES

Citizen Band. No Exams — Black Boxes
Commercial Users No Exams — Black Boxes
Amateur Radio. Exams — Freedom

How long will amateurs enjoy this freedom of choice if examination standards continue to fall?

Examinations for amateur radio licenses have been steadily falling over the years due to:

1 Those who want something for nothing and,
2 Those who want to fill our bands at any cost.

The latest road to disaster, confrontation and lower standards is DOCs proposal to allow private aligned groups to conduct and be involved in exam nations.

For the maintenance of quality and recognised exam nation standards, it is essential that those involved in the organ sation of examinations be independent, non-aligned, professional bodies such as RMIT, TAFE and similar organisations.

Yours sincerely,

Tony Tregale VK3QQ,
73 Nepean Street,
Watsonia, Vic. 3087.
ar

FURTHER TO. . .

. further to the note by Graham VK5AGR, in the AMSAT Australia column of AR, February 1987, it is necessary also to take into account feeder loss when calculating ERP.

Typically, my own antenna system is 30 metres away from the shack. This means that my RG8 feedline introduces a loss of about 3 dB. Assuming, say, an SWR at the transmitter of 1.2:1, the antenna SWR will be in the order of 1.45 1, and the loss up to the antenna, will be 3.2 dB (Refer to *System Loss and Antenna SWR*, AR, April 1982).

Thus, with a nominal antenna gain of 13 dB, my ERP is not 200 watts for 10 watts input, but less than 100 watts, due to the total system gain being 13 - 3 2 = 9.8 dB

Therefore check your line loss before having to reduce output power.

George Cranby VK3GI,
Box 22,
Woodend, Vic. 3442.
ar

IMPRESSED WITH TWO METRE REPEATERS

Having made a couple of trips to Canada I have become very impressed by the quality of and facilities provided by many of their two metre repeaters. There are many similarities between the Australian and Canadian Amateur Radio scenes and our governing bodies but Canada is far ahead of us in repeater technology. Vancouver for example has two intelligent repeaters on two metres providing phone patch, message store and forward, and time reports amongst other facilities by the integration of a computer with the normal radio repeater. As third party traffic and phone patching are both now available to the Australian amateur is there any regulatory reason why such facilities cannot be provided here in this country?

I can see many benefits not only to the improvement of the technical expertise of the Australian amateur but also to the community in general by having phone patch facilities attached to some of our VHF repeaters. There are many hours in a day when city repeaters are not being monitored by a home station and many more hours in the rural areas. Thus, should emergency services be required it is often impossible to contact them because there is no station with access to a telephone. There are many situations where a life could be saved by having access to a telephone, and it is an unfortunate situation that public telephones are becoming increasingly more difficult to find in working order.

I would be interested to know the policy of DOC, Telecom and the WIA in regards to phone patch facilities on VHF repeaters but more importantly in the opinions of other readers of AR on this subject. Is there enough interest and concern amongst Australian amateurs to improve our technical expertise and catch up to the Canadians and in so doing, improve our operating facilities?

Yours sincerely,

David Jewell VK3DAJ,
17 Rosaline Avenue,
Mount Waverley, Vic. 3149.
ar

SUBS FOR 1987

Please find subs for 87. I am not an amateur, only a Good Buddy CBer and Shortwave Listener. At a meeting of the North West Branch of Tasmania recently a discussion was held re the Pensioner Discount. I was amazed at the attitude of some of the members, mostly retired, and obviously by some of their activities, not short of a bob or two!

Another point I would like to make is the attitude of amateurs to CBers. What they should remembers is that CBers are subsidising the amateurs. One has only to check the number of licenced operators both CB and amateur to see who is paying the most to use the air waves.

Another point is this: most of the current amateurs are over 55 and thus will not be around for much longer.

The WIA and amateurs in general should be encouraging CBers as this is the source of future amateur operators.

Perhaps a special low class of amateur licence might be instrumental in getting some of these CB operators into the amateur ranks, thus giving them the incentive to obtain higher classes of licence.

Well, I have had my little gripe so will say cheers for now.

Yours faithfully,

Rick Rickard L30350,
41 Latrobe Road,
Relton, Tas. 7305.
ar

STOLEN EQUIPMENT RECOVERY

I wish to advise readers that my Icom IC-2A, serial no 09665, has been handed to the police by a gentleman who bought it at a pawn brokers in February 1986 (less than a month after it was stolen).

He told the police that he saw an editorial in ARA, January edition. He has no call sign yet but was sitting the February examinations in Brisbane.

Yours sincerely,

Iris Bonsey VK4NME,
42 Edinburgh Drive,
Bethania Waters, Qld. 4205.
ar

NON-PARTICIPATION

At the February General Meeting of this club, a decision was made not to participate in this years John Moyle Memorial Field Day Contest.

This decision was not taken lightly, and the record will show that our club has participated in most National Field Days during the past 20 years, and currently holds 11 certificates gained in that contest.

In past years the National Field Day was the big club event on the contest calendar. However, the emphasis on VHF and the ridiculous scoring system does nothing to encourage multi-operator stations entering the contest. By definition, a multi-operator station has the manpower and resources to operate on all HF and VHF bands.

Currently there is little incentive to set up HF equipment, when the value of any contacts made will be minimal when compared with those on VHF after the application of the disproportionately large multipliers for VHF contacts.

The object of the contest as outlined in February's AR mentions:

. . . training (operators) for preparedness in emergency situations. (P42).

Are we to assume that all emergency traffic will be handled on the VHF bands? The generous bonus for using "natural" power, would also seem at odds with the aims of the contest. Surely in an emergency situation, as encountered by this club on Ash Wednesday 1983, it is more beneficial to provide reliable communications, even if it is petrol powered, than rely on suitable sun or wind, or the production of power using baked beans.

The GARC would like to hear from individuals or clubs who share our concern about the direction of the National Field Day contest, and who would support a return to a more equitable scoring system.

Yours sincerely,

Barry Abley VK3YXK,
Secretary,
Geelong Amateur Radio Club,
PO Box 520,
Geelong, Vic. 3220.
ar

A LETTER OF PROTEST ON 50 BAUD

Sir, please excuse my typing since my hands shake badly due to my age. I am 95 years old.

My reason for writing is to protest against the speed increase of amateur RTTY in this area, you see, I am an old CW operator but no longer able to operate the key, as I could back in the 'good old days' due to the shakes.

My doctor recommended that I take up a hobby to occupy my mind. Dancing was out of the question unless the beat was in sync with my shakes. I found a record once that sync'd in on a sub-harmonic but the physical exertion put me in hospital for 10 days. Other hobbies have ended up the same way, in disaster.

However, in my efforts to discover a hobby, I found that I could copy 45.45 Baud RTTY in my head, and it was in perfect sync with my shakes. The up- shift and down-shift were quite exhausting until I converted jumping on and off my wheel chair, to sitting and nodding my head. It works beautifully and I have spent many pleasant hours reading the RTTY news broadcasts at 45.45 Baud.

Now that you have increased the news speed to 50 Baud, I have checked with my doctor to see if there is a drug available that could increase the speed of my sync so I could copy your increased speed. Some of the drugs have possibilities, but they are not legal and that is another story.

To date, I have only been able to sync on 45.45 Baud stations, so I implore you to go back to 45.45 Baud, for all the old timers like me. Sure, you can call it progress, but we all know the automobile did not entirely replace the horse.

Yours faithfully,

Signed: A Shaker.

PS — I developed a repert system by installing punches on my teeth but the added weight caused my uppers to keep falling out and hitting my hearing aid, not to mention the tape almost choking me, so I had to give that idea away.

Dated: April 1, 1987

—Forwarded by Bud Pounsett VK4QY
ar

Re FEBRUARY WICEN

Please refer to WICEN News on page 56 of February AR.

It has been pointed out to me that my report gave the impression that the Saint John Ambulance Brigade organisation were totally dependent on WICEN for their radio communications.

I wish to take this opportunity to correct any unintentional misunderstanding. Saint John Ambulance had their own communication network both HF and UHF on all their vehicles, plus base stations. Also, VK3SJA and VK3SJB were on air each day from 0900 to 2300 in a supporting role at SJA radio headquarters, in the Melbourne suburbs.

WICEN relayed messages only on the occasions when bad areas handicapped their communications.

Regarding progress reports from the check points along the bicycle route, as stated in my report, WICEN reported the progress of everyone connected with the bike ride — riders, Police Motorcyclists, doctors, and all first aid vehicles and personnel, to enable the *whole* organisation to be aware of their progressive whereabouts and any requirements.

I especially draw attention to the long hours and vital work the large team of Saint John Brigade volunteers, mobile, start and finish, together with the doctors who all carried out their roles efficiently and well.

The whole organisation in every respect did an outstanding, satisfying job which involved long hours and hard work.

It was a very valuable exercise in cementing good working and co-operation relationships with the Saint John Ambulance and all concerned, and the training on this and similar involvements with Saint John Ambulance, Red Cross, SES, etc over the years, has made WICEN a first-class communications reserve.

K V Scott VK3SS
34 Henry Street,
Malfra, Vic. 3660.

COMMENT. . .

Before commercial equipment was available the amateur had to be a practical constructor in order to get on the air. But there were many who were interested in electronics and experimenting for its own sake. Are there many such people left who would like to measure, for instance, frequencies to 10 GHz and beyond, make simple voltage controlled oscillators in the Gigahertz region, measure characteristic impedance better than some multi- thousand Dollar commercial gadgets, and so on? All with equipment (home- made) costing a few measly Dollars — just for the fun of it. If so, I would like to hear from you.

Roy Hartkopf VK3AOH
34 Toolangi Road,
Alphington, Vic. 3078.

Silent Keys

It is with deep regret we record the passing of —

[illegible] J P [illegible]TED	VK5CS
[illegible] L P [illegible]REENWELL	VK2VEA
MR T GRIERSON	VK5BA
MR RON HOLT	VK2QQ
[illegible] W L LAND	L30422
MR R J LUKEIS	VK3BRL
MR HAROLD LUNN	VK2ANE
MR LEONARD OLIVER OAKLEY	VK3BNH
MR J C R PAPESCH	VK2BPL
MR P J POLLARD	VK6IV
MR S V SMITH	L50585
MR R A C WILLIAMS	VK6AOS

Obituaries

IAN LESLIE GRIFFIN VK3VS
[illegible]
(ex-VK3IJ & VK5VO)

It is with deep regret that I record the passing of my close friend, Ian Griffin VK3VS, on January 26, 1987.

Ian was born in Geelong and lived his early days at Merong, near Bendigo. It was at Bendigo that Ian became interested in radio and obtained his amateur licence with the call sign, VK3IJ. In 1939, he ventured to Melbourne and worked at Radio Corporation, in South Melbourne, before joining the AIF and serving in the 39th Battalion.

His war service took Ian over the infamous Kakoda Trail, in New Guinea. From this ordeal he returned home in bad health. After rehabilitation and recovery he joined the Salvation Army in 1946, and to this cause he devoted his entire life.

He served in many capacities in several locations including South Australia, where he held the call sign VK5VO.

He served with distinction in the Salvation Army, retiring with the Rank of Major only last year. During his year of retirement, at Reservoir, Ian was active on the HF and VHF bands where he made many friends. His gentle humour and quiet manner will be sadly missed by his many friends who extend sympathy to his wife, Ivy and his family.

—Contributed by Des Greenham VK3CO

Thumbnail Sketches

Alan Shawsmith VK4SS
35 Whynot Street, West End, Qld. 4101.

—Photograph courtesy the Courier-Mail Printing Service

LORIMER DOUGLAS (RICK) RICKABY VK4VR (SK)

Rick, as he was known to his many mates, spent almost all of his life in some facet of radio communication.

He joined the RAN at the very early age of 14-years, quickly graduated as a telegraphist (called Radio Officers in some marine services) and sailed the world for 13 years. This experience set him up for the rest of his life in more ways than *brass-pounding*.

In 1935, Rick took out his first call sign, viz VK2ACY. One year later he emigrated to the Sunshine State and began work as Broadcast Technician at 4VL, Charleville. In this same year (1936) he came on air as VK4VR, and used this call sign for the next 40 years (WWII excepted).

Rick's next move was to 4AK, Oakley, and then to the parent station 4BK, Brisbane in 1941, where he played a very busy role in transferring the transmitting section from the City to the outer suburb of Seven Hills. This was a precautionary measure in case of an enemy aerial attack on Brisbane during the War.

Two years later, (1943) he offered his talents to the American Armed Services Pacific Area, and was based at Brisbane in the radio repair and maintenance section. In 1946, he was posted as Radio Officer to the Dutch Force, at Biak, and here he used the amateur call sign PK6VR, with much DX success.

Back in Brisbane, in civilian life, he worked for various radio firms, finally joining the Metropolitan Security Service in the mid-60s where he remained until becoming a Silent Key in October 1975, during his 70th year. All will agree his life was busy and varied.

He is affectionately remembered by the OOTers for his skill on the key and his ability to raise and lower tall masts — something he no doubt learned in the Navy and which caused him to be in constant demand around the fraternity. He also gained unexpected fame with his *Beer Can* vertical antenna, a creation which captured the Australian imagination and he had articles written about him in several magazines, including the *Australian Post* and overseas publications.

Before his death, Rick VK4VR had the deep satisfaction of seeing his son, Brian, take the AOCP and the call sign, VK4RX. Later, his daughter-in-law, Val, claimed the OMs call, VK4VR, for herself.

20th JAMBOREE ON THE AIR

It is obvious that JOTA is still growing in Australia. JOTA in 1986, saw some 32 000 people involved — over seven percent more than in 1985. The Branch Chief Commissioners and/or Guide State Commissioners seem to have been involved in nearly every state, thus indicating the importance they place on the event.

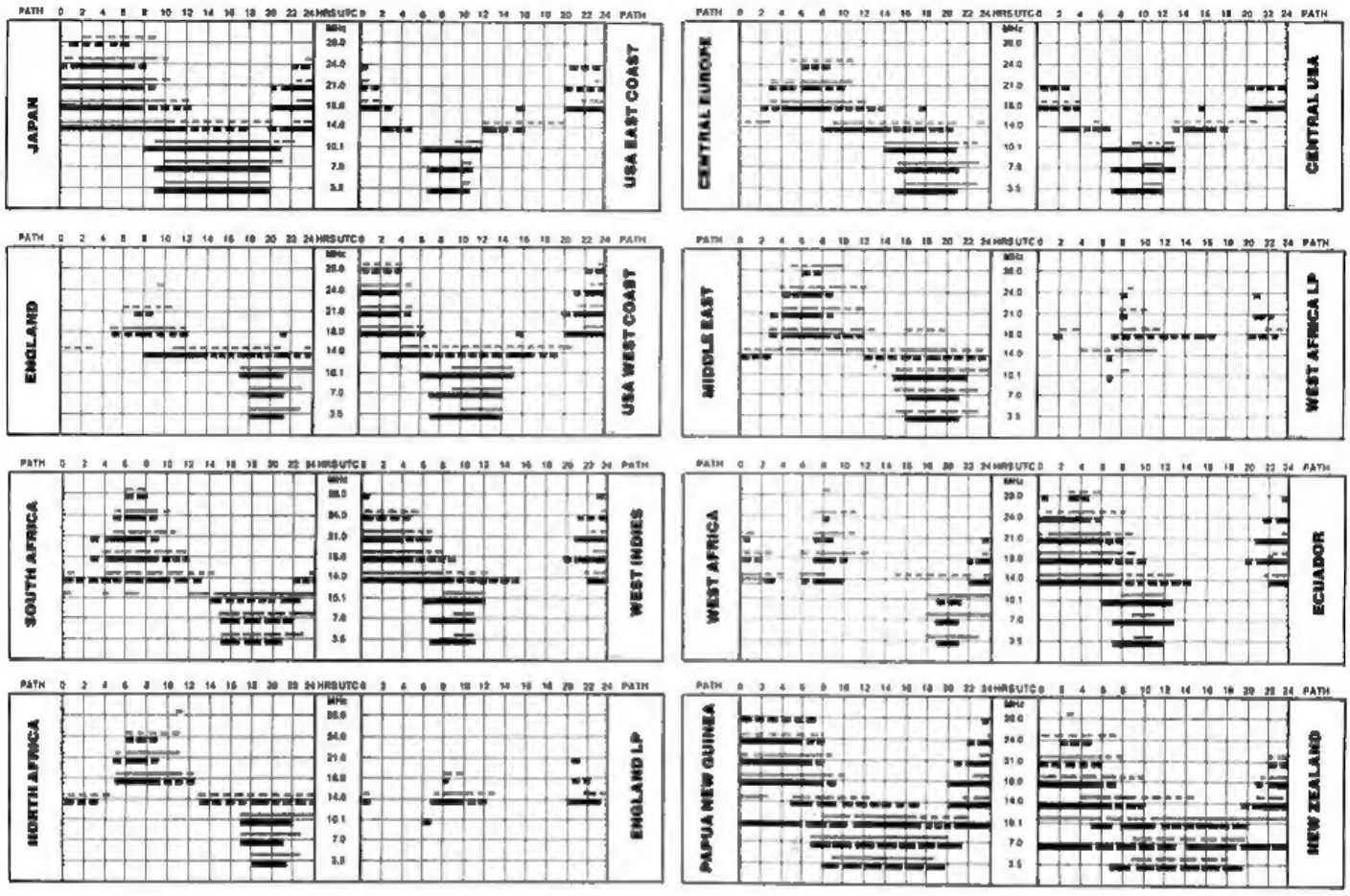
There was less comment about propagation problems, no doubt due to an increase in numbers of contacts by 45 percent. One Branch Organiser believed the overseas contacts were more difficult but better and longer contacts were made throughout Australia itself, although overseas contacts increased by 66 percent!

Heavy rain hit VK1BP right at the start of the opening broadcast and it was feared the noise of the rain on the marquee would interfere with the transmission. Apparently, it made little difference. Some troops reported camps washed out with terrible storms in VK3.

—Condensed report from Peter Hughes VK6HU, National Co-ordinator for Jamboree on the Air

Ionospheric Predictions

Len Poynter VK3BYE
14 Esther Court, Fawkner, Vic. 3060



LEGEND
From Western Australia (Perth)
From Eastern Australia (Canberra)

Mixed mode dependent on angle of radiation (long broken lines).

Better than 50% of the month, but not every day (continuous lines)

All paths unless otherwise indicated; (ie LP = Long Path) are Short Path.

Less than 50% of the month (short broken lines).

Predictions are presented courtesy of the Department of Science, IPS Radio and Space Services, Sydney.

Solar Geophysical Summary

OCTOBER TO DECEMBER 1986

GENERAL

Solar activity was mostly low in October — one energetic flare was observed on the 19th. There were up to five regions visible and most were 'reverse' polarity and so are typical of the incoming cycle. Flux rose to 99 on the 23rd, the highest since February 1986, with a sunspot number of 35.7, the highest since June 1984.

In November, activity was low with no energetic flares observed. At times there were a number of small regions visible and were a mixture of old and new spots — the disc being spotless on 12, 13, 26, 28 and 30th. The flux peaked at 91 on the 1st with the lowest of 71 on the 11th. The sunspot number was 14.7.

December was also low with no energetic flares observed. The sun was without spots from 1-8, 15, 18-20 and 26-31. The regions visible appear to be new cycle regions. This adds further weight to the suggestion that we are now past solar minimum and moving into the new cycle. The flux peaked at 75 on the 11th with the lowest value of 70 on the 7th. The sunspot number for the month was 6.4.

The running sunspot numbers were 4/86 = 13.8; 5/86 = 14.5; 6.86 = 13.9.

SUNSPOT CYCLE STATISTICS —

CYCLE 19

Start (minimum)	April 1954	R=3
Maximum	March 1958	R=201
End (minimum)	October 1964	R=10

Length 10.5 years.

CYCLE 20

First spot	September 1963	13 months pre-minimum
Start (minimum)	October 1964	R=10
Maximum	November 1968	R=111
End (minimum)	June 1976	R=12

Length 11.7 years (prolonged decay).

CYCLE 21

First Spot	November 1974	15,19 months pre-minimum
Start (minimum)	June 1976	R=12
Maximum	December 1979	R=165
End (minimum)	June 86 to December 1986? ? ?	

Length 10 to 10.5 years

CYCLE 22

First spot	March 1985	31,(Region 4640)

—Extracted from Solar Geophysical Summary supplied by the *Department of Science IPS Radio and Space Services.*

RADIODES

ODE TO A RELAY

O wondrous part — ingenious part,
Product of th' inventor's art
Which sits within a maze of wire
And — working hard — doth never tire.

Supply the power of its coil
And evermore it does its toil.
No slowing of its act is seen,
Provided that you keep it clean.

Sometimes a click, sometimes a thump
Declares this switch is not a chump.
Ten thousand times without a break,
This gadget works and keeps awake.

O ponder then this glorious thing.
Give honour due — its praises sing.
For does it not in lowly state
Use lesser power to change the great?

But soft — what makes my spirits sink?
It has no brain and cannot think,
And so the fault is far more strong
If e'er its mechanism's wrong.

—"Hambard" (Originally printed in the Nigerian ARS Newsletter 1970s)

DEADLINE

All copy for inclusion in the **June 1987** issue of *Amateur Radio*, including regular columns and Hamads, must arrive at **PO Box 300, Caulfield South, Vic. 3162,** at the latest, by **9 am, April 21, 1987.**

Hamads

PLEASE NOTE: If you are advertising items FOR SALE and WANTED please write *each* on a separate sheet of paper, and include all details; eg Name, Address, Telephone Number, on both sheets. Please write copy for your Hamad as clearly as possible. ***Please do not use scraps of paper.***

- Please remember your STD code with telephone numbers
- Eight lines free to all WIA members. $9.00 per 10 words minimum for non-members
- Copy in typescript, or block letters — double-spaced to ***Box 300, Caulfield South, Vic. 3162***
- Repeats may be charged at full rates
- QTHR means address is correct as set out in the WIA current Call Book

Ordinary Hamads submitted from members who are deemed to be in the general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.

Conditions for commercial advertising are as follows:
$22.50 for four lines, plus $2.00 per line (or part thereof)
Minimum charge — $22.50 pre-payable

Copy is required by the Deadline as indicated on page 1 of each issue.

TRADE ADS

AMIDON FERROMAGNETIC CORES: Large range for all receiver and Transmitting Applications. For data and price list send 105 x 220 mm SASE to: **RJ & US IMPORTS,** Box 157, Mordale, NSW. 2223. CLOSED DURING JUNE (No inquiries at office . . . 11 Macken Street, Oakley). Agencies at: Geoff Wood Electronics, Lane Cove, NSW. Webb Electronics, Albury, NSW. Truscott Electronics, Croydon, Vic. Willis Trading Co, Perth, WA. Electronic Components, Fishwick, Plaza. ACT.

WANTED — ACT

VALVE TESTER: in working order for USA & Aust vintage tubes project. Please advise make and model, range coverage, condition and price plus freight. Jock VK1LF, QTHR.

WANTED — NSW

BEAM: 3 element tribander. VK2PWU, 7 Tulip Street, Hyams Beach, NSW. 2540. PO Box 36, Huskisson, NSW. 2540. Ph:(02) 43 0685.

FAST TO SLOW SCAN CONVERTER: for a video camera or circuit of the same. Also any info on SSTV. All costs paid. Bill VK2FAW. Ph:(044) 21 0889.

VALVES FOR COLLECTION: duds OK. 800, 803, 805, 806, 808, 811, 812, 814, 826, 833A, 852, 860, 100TH, etc. Brian VK2EFD, QTHR. Ph:(049) 77 2178.

CIRCUIT DIAGRAM: for AWA Carphone Junior, and information on the crystals. Will reimburse photocopy expenses & postage. John VK2DVW, QTHR. Ph:(02) 57 6567 AH.

WANTED — VIC

COLLINS 75A-4 RECEIVER: Tubes 811A, 6AZ8, 6BN8, 6DC8. Gary VK3GY. Ph:(03) 789 4363.

YAESU FT-200 HF TRANSCEIVER: with spares if possible but not important. Must be clean. Contact John VK3ABW, QTHR. Ph:(03) 568 7428.

WANTED — QLD

CIRCUITRY: &/or service information on Transistor Portable Receiver — Zenith Trans-Oceanic Royal 1000. John VK4NZ, 25 Scrub Road, Coolum Beach, Qld. 4173.

FOR SALE — NSW

BEAM: 6 element Hi-Gain TH6-DXX, deceased estate VK2HF. $230 ONO. FV101 external VFO for FT101, as new condition, $95. Large collection of QST & Ham Radio mags dating back to 1960. Offers please or willing to donate to library. Mark VK2BAK. Ph:(02) 487 1299.

ESTATE OF THE LATE VK2EO: Collins S-Line 75S-3 receiver with 200 Hz CW IF filter, 32S-3 transmitter with home-brew power supply, 30L-1 linear, Hy-Gain TH6-DX 6 element HF beam, Telescopic 36 ft, 3 section windup tower, Vibroplex paddle and valve keyer. Inquiries and offers to Allan Mason VK2GR, QTHR. Ph:(02) 412 5412 BH, (02) 680 2538 AH.

SWAP: 52 issues Amateur Radio 1933-1939, plus 1 Weston & 2 Pelec valve testers for pre-1940 Australian radio magazines, trade catalogues or vintage radio parts. Brian VK2EFD, QTHR. Ph:(049) 77 2178.

YAESU 102 TRANSCEIVER: FRG7700 receiver, Kyothuto 2m transceiver. For details. VK2YN, QTHR.

YAESU FT-757GX, $975. Tektronix oscilloscope 545A, Mainframe $450. Plug-in preamps, type CA dual-trace $185. Type B, wide band $175. Type L, fast-rise $175. Type O operational amp $150. Type 1A1, dual-trace $175. Type 1A4, four channel $150. Type W, high-gain differential comparator $150. Type 1A7, high-gain differential amplifier $100. With manuals. VK2CPK, QTHR. Ph:(02) 238 7889 BH, (02) 411 1227 AH.

YAESU FTDX-400 HF TCVR: spare pair new final tubes, plus others. Instruction manual. $250. Barry VK2LA, QTHR. Ph:(02) 661 1088.

FOR SALE — VIC

BRAND NEW ITT 813 TUBES: made 1973 $50 ea. Used Johnson Ceramic sockets, suit 813 $15 ex. Filament transformers to run pair 813s, $20 ex. Emtronics EAT300 tuner, $140. Telereader Code Master CWR-610. CW, RTTY, De-coder & CW Trainer, $190. Garry VK3GY. Ph:(03) 789 4363.

ICOM 25H 2m TRANSCEIVER: in original box. $335 ONO. VK3TG QTHR. Ph:(058) 52 1636.

IC-701 & P/S: desk mic SM2, $650. IC-720A & P/S, desk mic SM5, $850. TS520 remote VFO $75. All E/C. One owner. VK3ED, QTHR. Ph:(03) 746 1438.

JRC HF TRANSCEIVER: as new. Comprising JST-100XCVR. NBD 500 PS, NFG-97 ant tuner & NVA-88 apkr. This is latest from JRC with ultimate in reliability & performance. Peter VK3IZ. Ph:(03) 842 8822 BH or (03) 715 1164 AH. Inspect at 27 Rosella Street, Doncaster East.

KENWOOD TS-120S: & desk mic. Good condition. $450 ONO. John VK3BAS, QTHR. Ph:(057) 52 2056.

TWO VHF SOCKETS: SK820A $50, P&P. Is there anyone who can help with a 'J' format video tape that is working for transfer-editing of tapes. VK3YNB, QTHR.

YAESU FT75B: with AC & DC port pack $320 ONO. Ceramic sockets for 813 or 6JAO tubes. Power trans from 300 V CT to 3000 V CT, cheap. TX tubes all types, cheap. VK3UT, QTHR.

FOR SALE — QLD

KENWOOD TS-430S: ex cond, light use, mainly as rx. Optional AM & narrow SSB filters fitted. Scanning mic. Manual & orig carton. $1050. VK4ABY, 13 Gassman Street, Gatton, Qld. 4343. Ph:(075) 62 2834.

YAESU FT-7: 1.8 kHz SSB filter, extra 10m band added, orig pkg, manual, VGC. $350. H-brew linear using 4 x 6146B to suit FT-7. Well made $190. Parts for solid-state HF linear, 10W in 150W out, 2 x DX542CF (sim MRF454), large heat sink, relays, all unused. $90. Valve 6m transverter, H-brew, $15. ARR15 aircraft receiver by Collins, 1.5-18.5 MHz, w. info, mods, GC, $100. Mutek SLNA 144s switching 2m preamp, VGC. $65. AR magazines, 1951 to present, only few missing. What offers complete lot? VK4AIZ, QTHR. Ph:(07) 391 5528 — not Fri pm or Sat.

YAESU RELAY BOX FRB-707: for connection FT-707 tcvr to FL-2100Z linear or FTV-107R transverter. New in carton $25 posted. Icom LDA unit Ex202. For installation in IC730 tcvr. Provides band control voltage for auto band change on Icom linear or ATU. New. $25 posted. VK4AGQ, QTHR. Ph:(07) 266 8107.

FOR SALE — SA

ATTENTION — EME ENTHUSIAST: For health reasons must sell my partially completed EME installation. 24 x 16' aluminium trusses shaped & assembled ready to make 32' parabolic (dish) antenna with f/d 0.45 & projected gain around 30 dB on 70 cm. Suitable for 1296 & probably higher. For details see page 64 of June 1986 AR. Price reduced to $2200 by omitting the existing tower. Enough material on hand & included to complete most of the project. A great engineering undertaking for an enthusiast — much of the work is already done. Your gain is my regret. Eric Jamieson VK5LP, QTHR. Ph:(08) 389 1204. Inspection by appointment only.

FOR SALE — TAS

DECEASED VK7 ESTATE: Kenwood TS520S, MIC 30 & MIC 50 mics, trap dipole, balun, TV300 LP filter, coax, "Leader" LAC 695 antenna tuner, inbuilt SWR & PWR meter, "Hansen" SWR bridge, 50W dummy load. All commercial gear, not home-brew. Morse key (ex-PMG, collectors item), text books. All immaculate. Offers for all or part to Bill VK7TE, QTHR. Ph:(003) 26 2297.

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